

NAVY YEAR BOOK

Edited by Phillip Andrews and Leonard Engel

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NAVY YEARBOOK

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Edited by Phillip Andrews and Leonard Engel
Jacqueline Wilton, Associate Editor

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NEW YORK

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NAVAL CHRONOLOGY—WORLD WAR II

BESIDES the submarine and mine campaign against Allied shipping, chronicled in another section of this volume, the Second World War's naval operations began with erection of a blockade against Germany. A major function of the Allied navies throughout, as a generation ago, has been to cut off supplies which Germany must obtain overseas. Necessary plans were made long before hostilities commenced and placed in effect at once. From the day England declared war, blockade has clutched at Germany with ever tightening pressure.

In general Allied blockade follows the pattern of the last war. Traditional squadrons riding before enemy ports have been made impossible by mine, submarine and aircraft so the blockade rests on British control of the narrows through which ships bound for most European ports must pass—the northern entrance to the North Sea, the English Channel, the Strait of Gibraltar and the Suez Canal. A supplementary sea-air watch has been maintained off the coasts of France and Norway since their occupation by the enemy. Allied commercial connections in every corner of the world are utilized to give early warning of German attempts to make purchases or move goods. The imports of European neutrals are also limited, to prevent resale to the Reich.

Two weeks before the invasion of Poland (Sept. 1, 1939), in anticipation of the blockade, Germany ordered her merchant fleet to intern in neutral ports or return home. Consequently, the blockading fleet caught comparatively few vessels; the Reich's 4,000,000 tons of ocean shipping, however, were effectively immobilized. Only an occasional ship has been able to slip through, as, for example, the liner *Bremen*, which left New York Aug. 28 and reached her name port (where she was subsequently destroyed by fire of uncertain origin) via the extreme North Atlantic, Murmansk and the Norwegian coast.

Allied naval superiority also barred the seas to German surface warships, except an occasional surface raider. Submarines were able to come and go, however, with comparative ease and, in addition to sinking several hundred thousand tons of shipping, scored several startling successes against the British navy in the first months of the war. On Sept. 18, a U-boat torpedoed the carrier *Courageous* as she was turning into the wind to take on aircraft. Less than four weeks later, Lt. Cmdr. Günther Prien performed the extraordinary feat of threading the anti-submarine defenses of the Royal Navy's great Orkney Island base, Scapa Flow, to sink the battleship *Royal Oak* (Oct. 14). In December, another U-boat damaged the battleship *Barham* (lost in November, 1941, to still another U-boat). Before *Barham* was repaired, *Nelson*, one of two 16-inch-gun British capital ships, was damaged by a mine possibly laid by a submarine. Thus, at the beginning of 1940, as a result of German underwater attack, the British line was reduced to twelve capital ships as compared with fifteen (twelve battleships and three battle cruisers) at the start of the war.

Soon after the outbreak of the war, two of the Reich's "pocket battleships,"

the *Deutschland* (later renamed *Lützow*) and Admiral *Graf Spee*, appeared in widely separated areas of the Atlantic to prey on shipping. *Deutschland* either left Germany before the British declaration of war or took advantage of fog to penetrate the blockade. Her first victim was the British freighter *Stonegate*, sunk toward the end of September. On Oct. 9, she touched off a series of hot international exchanges by seizing the American *City of Flint* on the charge that the *City of Flint* was carrying contraband. The *City of Flint* was taken to Murmansk by a prize crew. Soviet authorities, however, having no desire to pick up a hot potato, would neither treat her as a prize nor return her to her American crew. After considerable delay, she was simply ordered from Soviet territorial waters. She went to Norway. There the authorities, on technical grounds, turned her back to her original master. *Deutschland*, meanwhile, continued to cruise the Atlantic, but with meager results until shortly before her return home, when, in company with a light cruiser, she sank the armed merchant cruiser *Rawalpindi* (Nov. 23).

The cruise of Admiral *Graf Spee* was not only similarly unproductive of sizable Allied shipping losses—she sank only 50,139 tons—but led to her destruction as a consequence of the war's first engagement between regular naval surface units. The *Spee* left Wilhelmshaven late in August and headed for the South Atlantic, where she sent the British freighter *Clement* to the bottom Sept. 30. For two months thereafter, she doubled back and forth between Africa and South America (she may also have visited the Indian Ocean), taking an occasional victim and successfully eluding pursuit. On Dec. 3, however, *S. S. Doric Star*, which she intercepted off the west coast of Africa, got off a radio alarm before she went down. The message was picked up by the Royal Navy South American Division, Commodore (now Rear Admiral) H. H. Harwood, commanding. Commodore Harwood reasoned that the raider would leave West African waters since her position had been disclosed and that she might well head toward the mouth of the Rio de la Plata, a focal shipping point. Accordingly, three of his vessels, the eight-inch-gun cruiser *Exeter* and six-inch-gun cruisers *Ajax* and *Achilles* (his fourth, the 10,000-ton eight-inch-gun cruiser *Cumberland*, was in the Falkland Islands for repairs) rendezvoused off the Plata Dec. 12. The next morning a thin wisp of smoke from *Spee's* Diesel engines was sighted on the horizon. Battle was joined four minutes later, at 6:18 A. M.

Spee had a heavy advantage of armament, her broadside aggregating 4,700 pounds to 3,136 for the three British together. The British, however, were six knots faster and could split *Spee's* fire by proper squadron tactics. The gun duel, which lasted an hour and a half, was inconclusive. *Exeter* received several direct hits from *Spee's* 11-inch guns and was compelled to drop out of the fight with two turrets out of action, 61 dead and 23 wounded. *Spee* also had many

casualties, her fire control system was crippled and she was unable to shake *Ajax* and *Achilles*.

At the time of interception, the *Spee* had been proceeding directly toward the *Plata*. She continued in that direction afterward, although she had suffered no major structural damage and the guns of *Ajax* and *Achilles* were not heavy enough to hole her at battle ranges. Perhaps she was short of fuel. At any rate, still shadowed by the British cruisers, she anchored at Montevideo shortly after midnight. Under international law, she was compelled to leave three days later. However, instead of engaging Adm. Harwood's squadron, which now had *Cumberland* instead of *Exeter* (other reinforcements were on the way, but had not yet arrived), she blew herself up (Dec. 17).

Between the destruction of *Spee* and the Norwegian campaign, there were no naval actions of note, except the ceaseless submarine war and the rescue of captured British mariners from the prison ship *Altmark* off Norway by the destroyer *Cossack* (Feb. 15, 1940). The lull ended early in April, when the British announced plans to mine Norwegian territorial waters to close the corridor through which such vessels as *Altmark* and *Deutschland* had penetrated the blockade. But before the British were able to realize their design, the Germans, carrying out plans set in motion many days before, invaded Norway. The invasion was a "triphibious" operation, the first of the many combined land-air-sea attacks which have become an outstanding feature of the present war. It succeeded because of generally greater German military efficiency, treason in Norway, surprise (the British knew something was coming, but not what) and enemy occupation of all the nearer air bases. The last not only made operations of the Royal Navy difficult, but frustrated British counter-landings at Namsos and Andalsnes.

Throughout the Norwegian campaign, the German navy was employed as a force to be expended for a specific purpose rather than preserved as a "fleet in being." The Nazis were willing to sacrifice even major units to gain immediate ends. The main blow was struck by a partly water-borne, partly air-borne force landed at Oslo April 9. Simultaneously, small holding forces concealed in cargo ships which had anchored in the harbors several days previously seized ports as far north as Narvik. The "Trojan horse" troops were backed up by naval detachments arriving the same or the next day. The strongest of these detachments was sent to the area of Narvik, out of reach of German aircraft and terminus of the railroad from the precious iron mines of northern Sweden.

First enemy loss was the heavy cruiser *Blücher*, sunk as she steamed up Oslofjord with the invasion command. Believing that all key officers of the Oslo garrison had been bought off, she entered a shore-controlled minefield within point blank range of a battery of coastal guns. One of the gun commanders, however, was among the faithful and did his duty. British dive bombers sank the light cruiser *Königsberg* at Bergen the same day. Many ships also fell to British submarines. The light cruiser *Karlsruhe* was sent to the bottom off Kristiansand by *Truant*, another damaged the "pocket battleship" *Admiral Scheer*, and 28 transports were sunk and twelve damaged in a week by subma-

rines which bore the main burden of hacking at German supply lines across the Kattegat and Skagerrak.

While Oslo was falling to the invader, the battle cruiser *Renown* intercepted and fought a brief engagement with the battleship *Scharnhorst* and heavy cruiser *Admiral Hipper* off northern Norway. The engagement was without result. Under cover of a blinding snowstorm, however, five 1,800-ton Nazi destroyers joined "Trojan horse" units at Narvik. Informed of the German action, five smaller British destroyers raided Olofjord, on which Narvik is located, the following day, April 10. A destroyer, an ammunition ship and several supply ships were sunk at a cost of two of their own number. The battleship *Warspite* led nine destroyers in another raid April 13. This time, all the enemy warships present, seven destroyers, were cut down without loss to the British. On the other hand, the campaign was already going badly as a whole owing to German air dominance of the decisive waters of southern Norway. Namsos and Andalsnes had to be evacuated at the beginning of May. Narvik was finally taken by an Anglo-French force May 28, but, partly as a result of events elsewhere, had to be given up, too (June 10). The second loss of Narvik ended the Battle of Norway. Late phases of the struggle cost the Allies several destroyers, the old cruiser *Curlew* (converted into an AA ship) and the aircraft carrier *Glorious*, sunk June 8 by *Scharnhorst* while serving as a plane transport.

Thirty-one days after the descent upon Norway, the enemy struck at France and the Low Countries. The German navy did not figure in this campaign at all, and at the start, Allied naval forces served only in their familiar role of supply line guardians. On May 15, however, the Germans broke through at Namur and Sedan, and on the 21st, reached the English Channel at the mouth of the Somme. Allied troops to the north were cut off, their only escape evacuation across the Channel. This presented the British government with an unprecedented problem: evacuation meant exposing the Royal Navy to losses that might halve it overnight. No British government had ever taken such a risk. Nevertheless, the evacuation was ordered. In the disastrous spring of 1940, Britain forgot caution and wrote the finest chapter of her long and storied naval history.

Under the shield of an outnumbered RAF, a vast and conglomerate fleet marshaled by the Royal Navy (but manned by civilian volunteers and naval personnel alike) took 335,000 exhausted British and French troops from the Dunkerque trap in nine days. Vessels were culled from every source, the navy, steamship companies, fishing fleets, municipal lifesaving services, yacht clubs, private individuals, and were of every type, 222 men-of-war, 91 merchant ships, 57 passenger and store ships, 34 tugs and 665 small craft, as well as hundreds of ships' pulling boats (881 from the port of London alone).

"Operation Dynamo" — the British military code name for the evacuation, derived from the location of headquarters in a powerplant on the English coast — began May 26. Thirteen hundred men were picked up that afternoon and evening. A fearful setback was suffered the next day when King Leopold surrendered his Belgian army. The work proceeded nevertheless; 6,000 were

returned to England. By May 29, despite incessant German bombing and later shelling, the loading rate reached 2,000 an hour; altogether, 38,000 were saved that day. On May 30, 46,000 were evacuated; on the 31st, 60,000; and on June 1, the record number, 61,998. At the peak, as many as 150 ships at a time were waiting in Dover harbor to discharge their loads of evacuated. The withdrawal was completed by early afternoon of June 3. Only a few rear guards and stragglers failed of rescue.

"Operation Dynamo" saved 186,587 British and 123,095 French troops in all from Dunkerque; 35,000 more were picked up at other points. Two hundred fifty thousand of those from Dunkerque gained the rescue vessels by way of a rickety, many times shattered (but always repaired) wooden mole extending out into the harbor; Dunkerque's docks had long since been smashed by German bombs. The balance were taken out from the beaches in pulling boats which were either towed across the Channel or transferred their human cargo to larger craft and returned for more. The evacuation cost surprisingly few ships. Although scores of British destroyers and proportionate numbers of other vessels were damaged, only seven French and six British destroyers, 24 small craft and 24,000 tons of merchant shipping were sunk.

On June 10, the German army resumed its advance after a brief halt on the line of the Somme. The British were confronted with further naval crises at once. Italy entered the war that day, placing a strong Mediterranean navy in the Axis scale. Twelve days later, by the armistice of Compiègne, Britain lost the support of the French fleet. Not only that. The possibility arose of its seizure and active employment by the enemy. On June 16, Britain had released France from a pledge not to seek a separate armistice or peace on condition that the French fleet intern itself in British ports first. This was not done. Further, the armistice provided that French vessels were to go to Axis-controlled ports. The only ships that Britain could be sure would not be used against her were a few which had been operating out of British bases or with the British fleet and which were naturally not allowed to leave.

Although the armistice also provided that Axis-interned vessels were to be demilitarized, Britain required stronger guarantees. Accordingly, the Western Mediterranean Squadron appeared off the naval base of Mers-el-Kebir, near Oran, on the morning of July 3 and presented an ultimatum to the squadron there, containing half the French battle line. The ships were to rejoin Britain as allies, proceed to internment in non-Axis ports or scuttle themselves; failing acceptance of any of these proposals, force would be used to prevent them from falling into German or Italian hands. The French rejected all demands, and two and a half hours after expiration of the ultimatum's six-hour time limit, the British commenced fire. Of four battleships in the harbor, only *Strasbourg* escaped and she was damaged by an aerial torpedo as she fled. *Bretagne* was sunk, and *Dunkerque* and *Provence* (later taken to Toulon for refit, and again heavily damaged in the "suicide" of the French fleet in 1942) were crippled. Two destroyers and the seaplane carrier *Commandant Teste* were also sunk. Five days later, a British MTB invaded Dakar harbor on the West African coast

and disabled *Richelieu*, the only other French capital ship that could be used by the Axis, by dropping depth charges under her stern.

The crippling of the French fleet eased the pressure on the Royal Navy. Nevertheless, it was still very great. Italian belligerency compelled Britain to assign six battleships and attendant smaller craft to the Mediterranean, just when the smaller craft were urgently needed to combat growing U-boat activities in the Atlantic. The transfer of 50 over-age U. S. destroyers in September afforded some relief. The crisis was bound to continue, however, until elimination of the Italian fleet, too.

Throughout the summer and fall of 1940, the British sought to bring the Italian fleet to action. They were unsuccessful, not merely because Italian commanders may have lacked courage, but because evasion was sound Axis strategy. Then in November the British accomplished their purpose in a wholly unexpected manner. On Armistice night, torpedo planes from *Eagle* (since sunk) and *Illustrious* bearded the Italian fleet in its den at Taranto, on the instep of the Italian boot. The raid, the first mass employment of air torpedo craft, took the Italians completely by surprise. Three battleships were hit at anchor. *Giulio Cesare* and *Italia* (ex-*Littorio*), a brand new 35,000-tonner, received damage that rendered them unfit for many months. *Conte di Cavour*, a sister of *Cesare*, badly crippled was beached to keep her from sinking; British troops who occupied Taranto in 1943 found her with salvage operations less than half completed. Two cruisers, a destroyer and several supply ships were also damaged that night.

During the next several months, there were frequent clashes in the Mediterranean between British and Axis craft, sea and air, growing out of the struggle for Libya. The most notable was the seven-hour attack on *Illustrious* Jan. 10, 1941, which proved that a well-handled modern aircraft carrier can survive heavy punishment. *Illustrious* was attacked again and again by massive formations of planes, principally German, as she shepherded a Malta-bound convoy through the Sicilian narrows. A powerful consort, the new 9,000-ton cruiser *Southampton*, was sunk, but although her flight and hangar decks were reduced to shambles and she received other major structural damage, *Illustrious* was able to make a U. S. naval base for repairs under her own power.

The first and only British-Italian fleet action, the Battle of Cape Matapan, came two and a half months later. On March 27, Fleet Air Arm planes spotted Italian cruisers southeast of Sicily steaming toward the eastern Mediterranean, at sea either to attack an Allied convoy en route from Egypt to Greece or to cover the movement of an Axis convoy to Libya. The British squadron at Alexandria immediately set sail to intercept the Italians and protect the Allied merchantmen. The next morning, air reconnaissance found the battleship *Vittorio Veneto*, eight cruisers and nine destroyers south of Crete, just over the horizon from outriding British cruisers. The British cruisers (four in number) closed and then began a retreat designed to draw the Italians toward the main British body — three battleships and attendant craft. Meanwhile, torpedo planes from *Formidable*, Alexandria squadron carrier, made an attack. The

Italians were unharmed, but, lacking air escort, decided to withdraw. At this time, British aircraft found another Italian force — two battleships, three cruisers and four destroyers — which likewise turned back. The British gave chase to both and scored several air torpedo hits on *Vittorio Veneto* and other vessels, but otherwise made no contact. At ten o'clock that night, however, below Cape Matapan, southernmost of the Greek capes, they came upon the heavy cruiser *Pola*, hove to to make emergency repairs. As the British closed, the heavy cruisers *Fiume* and *Zara* and a *Colleoni* class light cruiser crossed the British bows at a range of 4,000 yards. Instant main battery fire literally blew *Fiume* out of the water and reduced *Zara* to flaming hulks, which were finished off by destroyer torpedoes. Two (possibly three) destroyers and perhaps an additional cruiser were also sunk.

After the Matapan disaster, large Italian forces again put to sea only occasionally until the surrender voyage to Malta nearly two and a half years later, and then only to ambush Malta-bound convoys. (One such operation, by a squadron that included a battleship, sank the cruiser *Hermione*, four destroyers, an escort destroyer and two other escorts of a June, 1942 convoy. Another Italian squadron, however, with two battleships, was beaten off the cruiser-and-destroyer escort of a March convoy.) Nevertheless, events were not to give the Royal Navy relief. The Alexandria squadron had scarcely returned to its base when Germany invaded Greece, unsuccessfully attacked by Italy five months before, and Yugoslavia. Both countries were overrun in a few weeks. In the last week of April, consequently, the Alexandria squadron found itself back on Greek waters, evacuating the remnants of a three-division British expeditionary force and also such Greeks as could be saved. The evacuated troops were brought to Crete. Crete's turn, however, came next.

The Royal Navy's first mission in the Crete campaign was to prevent an enemy landing by sea. As long as it could operate north of Crete, the mission was accomplished. The first German attempt to slip through a water-borne force with invasion equipment too heavy for air transport took place during the night of May 22-23, two and a half days after the initial air assault. Although the British squadron had been decimated by air attacks that day (the new light cruisers *Fiji* and *Gloucester* and four late-type destroyers had been lost), the motley Nazi armada, mostly small craft commandeered in Greek ports, was intercepted. Hardly a vessel escaped annihilation. Later expeditions were also sent to the bottom. However, capture of Crete's few airfields and withdrawal of the RAF finally compelled the squadron to quit its Cretan operating base, Suda Bay, and the waters between Crete and Greece. It withdrew from Crete altogether about June 1, after rescuing 15,000 British troops from Sphakia and other south coast ports in its second evacuation operation in five weeks.

At the very moment British fortunes were thus at an ebb in the Mediterranean — 1940 gains in Libya had also had to be given up — the North Atlantic witnessed a drama with a more favorable final outcome. Shortly after dawn of May 21, the Nazi pride *Bismarck*, accompanied by the heavy cruiser *Prinz Eugen*, slipped out of Bergen on her maiden battle voyage. Alerted by a

Coastal Command reconnaissance plane, the Admiralty promptly dispatched the battleship *Prince of Wales*, battle cruiser *Hood*, aircraft carrier *Victorious* and other fast ships in pursuit. They headed for Denmark Strait, between Greenland and Iceland, favorite German approach to the mid-Atlantic because of its dense fogs. *Bismarck* and *Prinz Eugen* ran true to form; heavy cruiser *Suffolk* spotted them in the strait on the evening of May 23. *Hood* and *Prince of Wales* made contact the next morning. The ensuing battle was brief but terrible. An early *Bismarck* shot — both sides started hitting at once — penetrated one of *Hood's* barbettes, which, as in other British World War battle cruisers, were insufficiently armored and lacking in anti-flash protection. The shell burst set off ammunition moving through the barbette to its turret. This in turn fired *Hood's* magazines and the largest man-of-war afloat was instantly destroyed by a single cataclysmic explosion. She sank in less than four minutes with all but three of her crew.

The loss of *Hood*, 42,000-ton symbol of British naval might, though many newer vessels of lesser size were in fact more powerful, brought a crushing reply. When her consort went down, the *Prince of Wales* broke off action. *Bismarck* had taken a waterline hit and lost a knot of speed, but the English ship, not as stout as her foe, had also been damaged. Consequently, she and her attendant cruisers, *Suffolk* and *Norfolk*, retired to shadowing distance pending reinforcement, which was already on its way. The first additional vessel to come up was *Victorious*, which arrived within torpedo plane range that night. Aircraft from *Victorious* made an immediate attack on *Bismarck* and, in the semi-darkness of two o'clock of a May morning in high latitudes, scored a torpedo hit which cut her speed four or five knots more. *Bismarck* was saved for the moment from further attack by bad weather and twenty-four hours later she and *Prinz Eugen* disappeared altogether in a fog. *Prinz Eugen* was not found again and made good her escape. An RAF Catalina flying boat, however, located the German battleship 550 miles west of England on the morning of May 26. That moment sealed her fate. After a midday failure, planes from *Ark Royal*, which had come up from Gibraltar, put two more torpedoes into her. One damaged her rudder and propellers and besides slowing her still further, made her virtually unmanageable. Additional crippling damage was done by another pair of torpedoes from the destroyers *Maori* and *Cossack*, delivered after midnight. At 9 A. M. the next day, May 27, she was engaged by 16-inch-gun *Rodney* and *Prince of Wales's* sister, *King George V*, of the Home Fleet. The two British battleships poured heavy shell into the almost stationary *Bismarck* for half an hour to silence her main batteries. The cruiser *Dorsetshire* then went in and sank her with a final torpedo salvo. The British had more than avenged *Hood*. The destruction of *Bismarck* not only eliminated the strongest vessel in existence, but reduced the German battle line by a fourth, whereas *Hood's* loss diminished the British only a fifteenth.

Although the war at sea naturally continued without cease, within a month it was overshadowed by the titanic land and air struggle unleashed by the German invasion of the Soviet Union. (Such details of Russo-German naval

fighting as are available will be found in the article on the Soviet navy). Naval action came to the fore again in December, however, with the attack on Pearl Harbor and final involvement of the United States and Japan in the greatest of all wars.

An explanation of why our Hawaii garrison and the Pacific Fleet were not on the alert will probably come only after the war or at the courts-martial of Adm. Kimmel and Gen. Short, the local commanders, whose trials, it is hoped, will be publicly conducted. At 6:30 A. M. of fateful December 7, the target repair ship *Antares* sighted a midget submarine just outside Pearl Harbor. Knowing it could not be an American vessel—we had no such craft—a destroyer and naval plane attacked at once and of course notified the office of the captain of the port. A few minutes after seven, Private Joseph L. Lockard, Army radar operator, reported a large flight of unidentified planes heading toward our mid-Pacific base. Yet the Japanese onslaught three-quarters of an hour later came as a complete surprise. Planes were in the open, lined up wingtip to wingtip for protection against local sabotage whose probability was overestimated, instead of in revetments or in the air, and ships were fast to moorings rather than on their way to the open sea.

The Japanese raiders numbered about 105 and came from carriers (probably three) which had crossed the Pacific under cover of an eastward-moving storm. The first to strike were nine fighters which appeared over the Kaneohe Bay naval air station, across Oahu Island from Pearl Harbor and Honolulu, at 7:48 and machine-gunned flying boats being readied for patrol. At 7:55, other aircraft struck at the principal Army fighter base, Wheeler Field, heavy bomber base Hickam Field and the naval air base in Pearl Harbor itself, Ford Island. The ships in Pearl Harbor were brought under attack seconds later by 21 torpedo bombers, 36 dive bombers and fifteen horizontal bombers. The Marine Corps air station at Ewa Field, the Army's Bellows Field and other secondary air stations were also hit.

With a comparative lull from 8:25 to 8:40, the attack lasted until 9:45. The raiders destroyed 80 and temporarily disabled or blocked from take-off (by bomb damage to runways) another 80 of the 202 naval aircraft at Oahu in condition to fly that day. Ninety-seven Army planes, including 66 bombers, were wrecked at Hickam and Wheeler Fields alone. The only combat planes we were able to put in the air were a squadron of Army P-36s at an emergency field the Japanese overlooked and a scout bomber squadron which flew in from an aircraft carrier due at the harbor that morning. Worse still, without protection save inadequate AA batteries (which were quickly manned, contrary to a widespread impression), five of the eight U. S. battleships present were disabled. *Arizona*, gutted by a magazine explosion set off by a bomb that plunged down her funnel and burst in her boiler room, was a total loss; *Oklahoma* had been capsized by torpedo hits; *California* and *West Virginia*, likewise air torpedoed, were sunk, fortunately in shallow water; and *Nevada*, badly hurt by dive bombers, had to be beached. The three remaining battleships, *Maryland*, *Pennsylvania* (in drydock) and *Tennessee*, were also damaged, though not

seriously. Finally, the destroyers *Cassin* and *Downes* had been completely wrecked in drydock and *Shaw* had lost her bow; the target ship *Utah* and mine-layer *Oglala* were capsized; a vital floating drydock was out of commission; and the light cruisers *Helena*, *Honolulu* and *Raleigh*, seaplane tender *Curtiss* and repair ship *Vestal* had received damage of lesser degree.

The object of the Japanese attack, which had cost three midget submarines and about 60 planes, 28 shot down by Navy planes and guns and 20 by Army craft, had been neutralization of our Pacific Fleet while long-laid plans for the conquest of Southeast Asia were put into effect. The enemy purpose was well accomplished. While nearly all the damaged units were capable of salvage, the majority of heavy ships were out of action for months (*Oklahoma* still is at this writing). The only major vessels to escape unscathed were our aircraft carriers and the battleship *Colorado*, by a series of coincidences absent from Oahu Dec. 7. Even after they were joined by the three lightly damaged and quickly repaired battleships, they would have required heavy reinforcement to offer effective resistance to the Japanese advance. Reinforcements could have been provided at that time, however, only by stripping our Atlantic Fleet.

On Pearl Harbor Sunday, the Japanese also occupied Thailand and moved against Malaya, the Philippines and secondary Pacific and Far East points such as Wake, Guam and Hongkong. The opening phases of the Malayan campaign unhappily presented them with an opportunity to dispose of the only other sizable naval force in their way, the newly constituted British Far Eastern Fleet. On Dec. 9, the fleet's main units, *Prince of Wales* and the battle cruiser *Repulse*, escorted by four destroyers, entered the Gulf of Siam to intercept enemy transports reinforcing a beachhead already established at Kota Bharu in northeastern Malaya. The squadron was without air cover—neither carriers nor land-based planes were to be had—but protection from air attack was promised by a storm. A reconnaissance plane spotted it, however, through a break in the overcast late in the afternoon and it was brought under instant and heavy air attack when the next morning (Dec. 10) dawned unexpectedly clear. *Prince of Wales* was crippled by the first wave of torpedo bombers, one of whose missiles struck aft and smashed her rudder and propellers. She was hit many times thereafter by torpedoes and bombs both and finally sank. The first attacks on *Repulse*, on the other hand, resulted in only one bomb and no torpedo hits, but a third wave of attackers drove two torpedoes home amidships almost simultaneously and on opposite sides of the vessel. The battle cruiser sank so quickly that a third of her men went down with her.

Without sea power to punch reinforcements through and link scattered land and air garrisons, the dismal succession of Allied defeats in the East in the next six months was inevitable. In January, however, surviving Allied vessels between Singapore and the Philippines—other than local craft such as the PT boats of Lt. Cmdr. John D. ("We Were Expendable") Bulkley—were brought to Java and united in "Abdafлот" (American-British-Dutch-Australian fleet) to increase the damage that might be inflicted on the Japanese before they themselves were destroyed. Abdafлот's operations were surprisingly suc-

cessful. Its most powerful vessel was a partly crippled 9,050-ton eight-inch-gun cruiser, *U. S. S. Houston*. (*Houston's* stern turret, containing a third of her main armament, was out of action after Feb. 4 as a result of bomb damage). There were also constant difficulties of communication, each participating nationality having its own signaling system. Nevertheless, the Four Nations fleet won resounding victories in two night actions and was not worsted until the very end of the Feb. 27 engagements in the Java Sea. Its heaviest losses came only when it was divided into small detachments to try running the Java Straits to safety.

The first Abdaflot surface ship action — submarines and planes of its own and other commands had been busy all along — was a surprise attack on a large Japanese convoy in Macassar Strait, carried out by American destroyers as other Abdaflot units were engaged in supply escort around beleaguered Singapore. At 3 A. M. of Jan. 25, the destroyers, World War four-pipers *John D. Ford*, *Parrott*, *Paul Jones* and *Pope*, came upon a group of enemy transports and late-type destroyers silhouetted against burning Balikpapan, Borneo, whose oil wells and storage tanks had been fired by the departing Dutch. Cmdr. Paul S. Talbot sent his force through the convoy four times (twice in each direction), firing torpedoes on the first three runs and guns on the last — there were no more torpedoes — at point blank range. At least seven Japanese ships were sunk. Answering fire scored only one hit and caused but a handful of casualties.

The principal American and Dutch Abdaflot vessels, *Houston* and three light cruisers, were assembled into a striking force under Dutch Rear Adm. Karel W. F. M. Doorman at the beginning of February. Its first venture, an attempt to intercept a convoy bound for south Borneo, was a failure, accomplishing only disablement of one of the light cruisers, *U. S. S. Marblehead*, and the damage to *Houston*. On the eleventh of the month, however, Dutch Vice Adm. C. E. L. Helfrich, who was better acquainted with East Indian waters, replaced American Adm. Thomas C. Hart as Abdaflot chief. Adm. Helfrich carried out a successful night attack Feb. 19-20 on a Japanese fleet landing troops in southeastern Bali. The invaders were hit by expertly timed raids from opposite ends of Lombok Strait, which separates Bali from its eastern neighbor, Lombok Island. Craft ranging from motor torpedo boats to the Dutch light cruisers *Java* and *De Ruyter* took part. Besides uncounted transports, the Allied warships sank a cruiser and destroyer and heavily damaged an additional cruiser and two destroyers, at a cost of one Dutch destroyer, *Piet Hein*.

On Feb. 27, Adm. Helfrich ordered Doorman's striking force to sea "to search for and attack, notwithstanding air attack" a Japanese armada finally headed for Java itself. Adm. Doorman, who is surely one of the stoutest sea fighters of history, had five cruisers, which he disposed for battle thus: *De Ruyter*, flying his flag, in the van; the British heavy, *Exeter*; damaged *Houston*; an Australian six-inch-gunner, *Perth*; and *Java* bringing up the rear. Battlecraft are usually arranged with the heavier ships at the ends of the line. Doorman had to place his in the center because neither had adequate aft armament. Three British

destroyers formed a forward screen, four Americans were in the rear and two Dutch, to port. Owing to boiler damage to *Kortenaer*, one of the Dutch destroyers, the "fleet's" best speed was only 25 knots. None of the cruisers had gunfire-spotting planes; their catapult craft had all been damaged or lost weeks before.

Doorman's force met the enemy, two heavy cruisers (with ten eight-inch guns each, against *Exeter's* and *Houston's* six), six or seven light cruisers and two flotillas of destroyers, with full air support, north of Surabaya late in the afternoon. Steaming on parallel courses, the two squadrons engaged in a gunnery duel at medium and extreme ranges for nearly an hour. *De Ruyter* and *Java* were hit, but received negligible damage. One of the Japanese heavies, on the other hand, was afire and the other had also been heavily punished. Two Japanese torpedo attacks had resulted in the loss of *Kortenaer*, but one enemy destroyer had been disabled or sunk by *De Ruyter* and another by *Perth*.

At this point, with the outnumbered Allies more than holding their own, occurred one of those accidents which happen so frequently in multi-national fleet operations and which would have wrecked a lesser man than Doorman. An eight-inch shell penetrated *Exeter's* boiler room, slowing down the British cruiser and compelling her to quit the line. Through a mix-up in signals, *Houston*, *Perth* and *Java* followed her when she turned out. *De Ruyter* was left facing the Japanese alone and the destroyers were so scrambled there were none in screening position between the cruisers and the enemy. Doorman quickly ordered the destroyers to lay smoke and the cruisers, except *Exeter*, to continue the turn until they had come full circle and were once more engaging the enemy with his own ship in the van — no mean feat, since the vessels had to dodge torpedoes during the maneuver.

The two cruiser groups resumed their gun duel. The Allied vessels not only beat off still another torpedo attack, but scored additional hits on the main enemy ships. Adm. Doorman decided to break off, however, to try to work around the Japanese warships to the invasion convoy that was his main objective. His vessels were unfortunately too slow for that. Meanwhile, he had suffered his second loss of the day, *H. M. S. Electra*, one of three destroyers detached to counterattack an enemy force attempting to cut off wounded *Exeter*. *Electra* disappeared into a smokescreen and was not seen again.

Adm. Helfrich's order to find and attack the enemy regardless of consequences had been issued in hope of staving off invasion of Java long enough for *U. S. S. Langley* to arrive with planes which might prolong the struggle until stronger forces could be sent. Doorman did not know that *Langley* had been sent to the bottom south of the island that day and that consequently all hope was gone. He decided therefore to sweep westward along the Java coast that evening to prevent any enemy attempt to land under cover of dark, although his remaining destroyers had to return to port for lack of fuel and torpedoes. He encountered and exchanged fire with enemy cruisers about 11 P. M. Shortly afterward, however, disaster overtook him when *De Ruyter* and *Java* were sunk almost simultaneously by underwater explosions, probably caused by submarine torpedoes. Doorman went down with his ship. There was no more

striking force and the way to Java was open. *Houston*, *Perth* and *Exeter*, ordered out of the Java Sea, were cut down en route.

During the Japanese advance through Southeast Asia and the South Pacific, the Allies were also pressed by the intensified U-boat campaign in the Atlantic. The successful dash of *Scharnhorst* and *Gneisenau* under cover of heavy weather through the English Channel from Brest to Kiel Feb. 11-12 to join *Bismarck's* twin, *Tirpitz*, further complicated the Allied position by threatening a reconstituted German battle fleet. As a result, little could be undertaken in the way of offensive naval operations in the first half of 1942 outside the dispatch of submarines to Axis waters on both sides of the world. The principal other actions were a series of carrier raids under Adm. William F. Halsey (*Makin* and the *Gilberts*, Jan. 31, *Wake*, Feb. 24, and *Marcus*, March 4), the celebrated bombing of Tokyo by Maj. Gen. James H. Doolittle, April 17 and the British landing in Madagascar May 5. The Halsey raids accomplished the destruction of eighteen enemy vessels, mainly auxiliaries, and 31 planes, as well as major damage to shore installations. The Tokyo raid, carried out by 16 North American Mitchells launched from *Hornet*, did only slight physical damage to Tokyo and the other cities attacked. On the other hand, whatever our intention, the raid had the effect of inducing the Japanese to recall fleet units which had begun operating in the Indian Ocean two weeks before and had already sunk the cruisers *Dorsetshire* and *Cornwall* and aircraft carrier *Eagle*, the main units of an outnumbered British squadron on which depended the sea defense of India. The occupation of Madagascar, which was not completed until November, secured the western half of the Indian Ocean and Allied communications around the Cape of Good Hope. In May and June, however, the U. S. Pacific Fleet fought two defensive battles which ended the menace of further Japanese expansion.

Early in March, the Japanese had begun concentrating ships and aircraft at Salamaua and Lae for an advance into the Solomons and the Louisiade Islands, southeast of New Guinea. Held up a month by American and Australian air attacks (especially an American carrier raid March 10, which sank or damaged more than 20 enemy vessels), the enemy got underway at the beginning of May. The counter-action of the Pacific Fleet was swift and effective. On May 4, without loss to itself, a task force under Vice Adm. Frank J. Fletcher surprised and all but annihilated a group of twelve warships and transports at Tulagi Harbor in the Solomons. Three days later, planes from *Enterprise*, *Lexington* and *Yorktown* found a larger force, including two or three big new carriers, near Misima in the Louisiades. The two carrier forces traded air blows through the 7th and 8th in what has come to be known as the Battle of the Coral Sea. The Japanese carrier, *Ryukaku*, three heavy cruisers, a light cruiser, two destroyers and several transports were sunk. U. S. losses were a tanker, a destroyer and *Lexington*, caught on the 8th away from the stormy skies which had shielded her until then. *Lexington* was wounded by torpedoes and bombs, which, besides other damage, ruptured gasoline lines and caused fatal gas explosions later in the day.

Notwithstanding their setback in the Coral Sea, which compelled them to retire to the north of the Louisiades, the Japanese set an even more ambitious project in motion toward the end of May: an attempt to seize Midway and perhaps Oahu. Had they anticipated fully the success of their planes and been ready with an expeditionary force then, such an essay might have succeeded on Pearl Harbor Sunday. Now it was foredoomed although the Japanese committed nearly half their total naval strength to the undertaking. Two large forces were sent. One, battleships, a carrier, cruisers and destroyers, approached Midway from the northwest. The other, battleships, three or four carriers, cruisers, destroyers, transports and cargo vessels (more than 80 ships in all), came from the west. The latter was spotted by Navy patrol planes on the morning of June 3. Both forces were in retreat by noon of the next day and before they were again in waters beyond American reach, had lost, besides other vessels, four of their carriers.

The Japanese advance was timed as usual to coincide with a storm. Moreover, the enemy was 700 miles from Midway when spotted and American carriers had to be brought forward. Hence, only two attacks were made on June 3, on the westward fleet each time, one by Army Flying Fortresses in the afternoon and the other by torpedo-carrying Catalinas during the night. June 4, however, found the enemy close at hand and under clearing skies and brought attacks by more than a dozen formations of U. S. planes in the space of a few hours. The enemy was hit by torpedo-carrying Army *Martin* *Marauders*, Marine Corps torpedo bombers, Army Flying Fortresses, two formations of Marine Corps dive bombers, at least three formations of carrier-based Navy dive bombers and at least four of carrier torpedo craft. Meanwhile, Marine Corps fighters were successfully repelling a heavy Japanese air assault on Midway.

Operations of the morning and early afternoon of June 4 cost *Yorktown* and several score aircraft, partly because the westward enemy fleet began its retirement about 9 A. M., at a moment when no American planes were in contact, and it was some time before it was accurately relocated. On the other hand, the enemy suffered considerable damage. The carriers *Kaga*, *Akagi*, *Hiryu* and *Soryu* were each hit by bombs and torpedoes. Fires on the first three were soon out of hand; on *Soryu*, they were brought under control for a time, but started afresh by torpedoes from a U. S. submarine late in the afternoon. All went down that night (June 4-5), one of them, *Kaga* or *Akagi*, by action of the Japanese themselves. Three battleships and several other vessels were also hit and a destroyer sunk. Marine fighters at Midway shot down more than 40 enemy aircraft.

Unfavorable weather after the afternoon of June 4 hampered pursuit. Nevertheless, Army bombers hit a cruiser and another destroyer in a sunset raid and pressed home three more attacks the next day, hitting the same and another cruiser. The damaged cruiser was also struck by Marine Corps planes. On June 6, our carriers were again in position for attack and located two cruiser and destroyer groups. The cruiser *Mikuma* and still another destroyer were

sunk and *Mikuma's* sister *Mogami* was possibly sunk, certainly very severely damaged.

Altogether, in the Battle of Midway, the Japanese lost more than half their available carrier strength, one or two cruisers, three destroyers, a transport and 275 planes. Three battleships, four or five cruisers, several destroyers and three transports were damaged. Besides *Yorktown*, American losses were about 100 planes and the destroyer *Hammann*. *Yorktown* was put out of action June 4 by planes from *Hiryu* before the latter was found. She was further damaged and *Hammann* was sunk by a submarine two days later while *Hammann* was alongside supplying power to a salvage crew aboard the carrier. *Yorktown* capsized and went down the next morning.

A few hours before the Japanese were found off Midway, nineteen planes from a smaller force (an old carrier, an auxiliary carrier, cruisers, destroyers and transports) attacked Dutch Harbor, the principal American base in the Aleutians. A second attack was made late in the afternoon of the following day by 34 planes. The raids, the first of which came as a surprise owing to the enemy device of keeping behind the Aleutians while approaching and so escaping radar detection, were apparently intended to draw American forces from the Midway area. As a diversion, they failed; however, they led to a fourteen-month game of blind man's buff in the dense fogs, sudden windstorms, reversible winds and other vagaries of Aleutian weather. Disappointed at Dutch Harbor, the Japanese occupied Agattu, Attu and Kiska in the western Aleutians. Counterattacking American forces occupied Adak in the Andreanof group Aug. 10 and the Japanese withdrew from Agattu some time in September. The Americans advanced again five months later, landing on Amchitka, 75 miles from Kiska, Jan. 12, 1943. On March 26, an American surface force drove a Japanese squadron of two heavy cruisers, two light cruisers, six destroyers and two transports out of the area of the Komandorski Islands, northwest of Kiska. On May 11, U. S. Army troops landed on Attu, which was conquered in a three-week campaign. The last of the three Japanese-held islands, Kiska, was evacuated by the enemy early in August and occupied by American and Canadian forces Aug. 15. Throughout, Army and Navy planes were both active as often as weather permitted.

About a month after the Midway battle, air reconnaissance reported Japanese construction of an airfield on Guadalcanal in the southern Solomons, perhaps in preparation for renewal of the advance halted in the Battle of the Coral Sea. To frustrate this design, U. S. Marines landed on Guadalcanal and Gavutu and Tulagi, islets in Tulagi Harbor, Aug. 7 and seized the airfield. However, instead of the limited campaign expected, the landing led to a savage struggle of attrition in which half a dozen major naval battles were fought. The Japanese made every effort to oust the Americans from the southern Solomons and halt what they recognized as the coming Allied counteroffensive in the Pacific.

The task force bearing the Marines approached the Solomons behind a storm front and took the defenders by surprise; most locally-based Japanese

aircraft were destroyed before they could take off. Enemy air activity was also held to a minimum the first two days by Army Air Force raids on Rabaul, the central Japanese base in the South Pacific. But during the second night, Aug. 8-9, Allied naval units were caught off guard by a Japanese force of perhaps only three cruisers, which disabled the Australian cruiser *Canberra* (her hulk had to be sunk the next day) near Cape Esperance and, half an hour later, sank the American heavies *Astoria*, *Quincy* and *Vincennes* off Tulagi. The losses suffered in the Battle of Savo Island, as the action is known, left the Allies without enough vessels in the area to cover further landings. Hence the Marines on Guadalcanal (Gavutu and Tulagi had already been taken) had to fend for themselves for more than a month. A U. S. carrier task force, however, turned back two counterattacking enemy fleets in a sea-air action Aug. 24. Marine Corps planes from the captured Guadalcanal airfield (named Henderson Field by the Marines) also took part in the battle, in which the enemy carrier *Ryuzo* was severely damaged. The Guadalcanal Marines were also secured against any Japanese move from the north by annihilation of the garrison of Makin by the submarine-landed Marine raiders of Lt. Col. Evans F. Carlson (Aug. 17).

A relief force (of which the carrier *Wasp* was lost en route, by submarine action) reached Guadalcanal Sept. 18 and the situation took an immediate turn for the better. On Oct. 5, *Hornet* and another carrier raided Buin and Faisi harbors in the northern Solomons, damaging five vessels. Just a week later, heavy cruisers *Pensacola*, *Salt Lake City* and *San Francisco*, light cruisers *Boise* and *Helena* and attendant destroyers, seeking enemy ships attempting to slip in reinforcements under cover of night, unexpectedly crossed the bows of six Japanese cruisers and six destroyers disposed in column. The U. S. cruisers opened a heavy fire whose effectiveness was enhanced by confused Japanese attempts to maneuver out of the crossed-T position in which the enemy found himself. In under 40 minutes of the Battle of Cape Esperance, at least six and probably eight Japanese vessels (among them, two to four cruisers) were sunk. U. S. casualties were the destroyer *Duncan*, lost, and *Boise* and *Salt Lake City* and a second destroyer, damaged.

Notwithstanding the American victory of Oct. 12, the Japanese were able to strengthen their units on Guadalcanal and launch heavy attacks supported by air and surface ship bombardment. The American fleet again had to stay at sea to counter a further Japanese movement which was indicated by ship concentrations at Rabaul and which in fact materialized in less than two weeks. The Japanese, who came in two groups, one including battleships and the other with two *Zuikaku* type carriers, were located and attacked Oct. 26 near the Santa Cruz Islands, whose name the action bears. While dive bombers from Henderson Field were hitting two cruisers of still another Japanese force, planes from *Enterprise* and *Hornet* disabled one of the enemy carriers and damaged the other and also damaged two battleships and three cruisers. The Japanese turned back. On the other hand, U. S. carrier strength was reduced to three by the loss of *Hornet*; *Hornet* underwent two attacks, one in the morning and one in the afternoon. The first left her dead in the water; the second caused her to capsize.

She was sunk by American torpedoes during the night to prevent the Japanese from boarding and examining her. The destroyer Porter, a *Hornet* consort, was also lost.

The decisive Battle of Guadalcanal was fought in two rounds, Nov. 12-13 and 14-15. A large convoy of Army troops relieved the Marines Nov. 4. The Japanese landed reinforcements a week later. The next night, Nov. 12-13, the Japanese, thinking American warships were escorting out of the area a second American convoy that had arrived and unloaded that day, attempted to bring in additional forces. A medium force, however — two heavy cruisers, three light cruisers and eight destroyers — returned. It met a Japanese squadron (two battleships, three heavy cruisers, four light cruisers and ten destroyers) at 1:40 A. M. of the 13th near Savo Island. The battle was an indescribable melee with the Americans right among the three columns of Japanese ships. Ranges were as little as a thousand yards and torpedo action figured prominently. All but one of the American destroyers and the 6,000-ton cruisers *Atlanta* and *Juneau* were lost or received subsequently fatal damage. But the enemy lost five cruisers and five destroyers and possibly a battleship. After daylight of the 13th, Henderson Field torpedo planes found and disabled an already damaged capital ship, which the Japanese scuttled that evening (Nov. 13-14). She may have been a different vessel from the one crippled in the action of the previous night.

In the early hours of the 14th, two additional Japanese battleships shelled American positions without interference except from PT boats which damaged an attendant cruiser. When the Japanese attempted to repeat the bombardment on the night of the 14th-15th, however, they were intercepted by a pair of American 35,000-tonners. Three cruisers, a destroyer and a heavy cruiser or battleship were sunk without American loss in another melee around Savo Island. During the previous day (the 14th), carrier and land-based planes had sunk two cruisers (one of them the ship damaged by PT attack) and eight of twelve vessels in an enemy transport flotilla. The remainder were destroyed at Tassafaronga beach on the morning of the 15th by planes, Army artillery and a cruiser.

Japanese losses in this series of action were extremely heavy: at least two battleships, eight or nine cruisers, six destroyers, a dozen transports and a seaplane tender. The enemy nevertheless made another attempt to run in reinforcements, on the night of Nov. 30-Dec. 1. Again a Japanese disaster resulted. The Japanese, two flotilla leaders, eight destroyers and several transports, were caught off Lunga Point by the heavy cruisers *Northampton* and *Pensacola* and a number of lighter vessels. In another brief, but wild, scramble, the two flotilla leaders, four destroyers and three merchantmen were sent to the bottom, at the cost, however, of heavy damage to *Pensacola* and the loss of *Northampton*.

The Guadalcanal campaign dragged on after the Lunga Point battle until Feb. 9, when troops landed in the Japanese rear joined the main American body at the Tenamba River, but the only further notable naval action was an unusual night air torpedo attack on a convoy off Rennell Island Jan. 29 which disabled the heavy cruiser *Chicago*. *Chicago* went down under a second air torpedo

attack the next morning. In the meantime, important events had taken place elsewhere. On Aug. 19, a force of 6,000 troops, predominantly Canadian, but including some British and small American and Free French units, had carried out a nine-hour landing at Dieppe under protection of Royal Navy guns and Royal Air Force planes. Less than three months later, Nov. 8, came the invasion of North Africa.

The North African operation employed the largest fleets the Allies had yet assembled. One, numbering nearly 300 American warships and transports carrying American troops, came directly from the U. S. to land at Fedala (near Casablanca), Mehdia and Safi on the Moroccan Atlantic coast. The other, almost twice as large and comprising mainly British vessels but carrying British and American troops both, sailed from Britain and, clearing through Gibraltar, landed at Oran and Algiers. Virtually no opposition was met at Algiers and only a little at Oran. At Casablanca, however, station of a considerable French fleet, including the partly finished battleship *Jean Bart*, resistance, though brief, was intense both on land and sea. *Jean Bart* fired on the American armada until silenced by the guns of a 35,000-tonner, and the smaller vessels, several of which were sunk, made torpedo attacks. But the operation proceeded smoothly as a whole. U-boats had been able to sink only one transport out of the Africa-bound fleets and only sixteen vessels were lost during and after the invasion. These were: American transports *Edward Rutledge*, *Hugh L. Scott*, *Joseph Hewes*, *Leedstown* and *Tasker H. Bliss*; British escort carrier *Avenger*; British destroyers *Broke* and *Martin*; Dutch destroyer *Isaac Sweers*; British ex-American Coast Guard cutters *Hartland* and *Walney* (expended in a not altogether successful attempt to force the boom of Oran harbor); and British auxiliaries *Gardenia* (corvette), *Ibis* (sloop), *Tynwald* (AA ship), *Algerine* (mine-sweeper) and *Hecla* (tender).

The collapse of Axis resistance in Tunisia the following May (1943) paved the way for the first Allied landing on European soil, the invasion of Sicily July 9. The Sicilian operation, which followed the surrender of Pantelleria and other Italian Mediterranean islets under heavy air attack, involved more than 3,325 Allied vessels, a larger fleet than carried out the African invasion (but not four times as large, as landing craft proceeding from Tunisia under their own power and counted separately comprised more than half the Sicilian force). British troops landed on the east coast, above and below the city of Syracuse; Canadians landed on the southeast tip; and Americans on the south coast as far west as Licata. All were preceded by air-borne troops, whose employment, however, was a failure. High winds (which also created difficulties for the landing craft) drove many of the planes off course and others were shot down by mistake by Allied warships. But Axis resistance was slight except at a few points such as Gela, in the American sector, when cruisers and destroyers, their fire controlled by naval officers who had gone ashore with the troops, provided invaluable support. Standard British and American secondary naval guns proved especially effective against tanks.

The conquest of Sicily required 38 days. On Sept. 3, two weeks after its

completion, Italy surrendered and units of the British Eighth Army crossed Messina Strait to Calabria, toe of the Italian boot. They were virtually unopposed. However, when the Anglo-American Fifth Army landed at Salerno, below Naples, five days later (the date on which the Italian surrender was announced), it ran into a storm of opposition. German counterattacks on the beachhead were beaten off only by the most desperate defense, in which three U. S. cruisers and eighteen destroyers took part, along with an equal or greater British force. Two of the American destroyers, *Bristol* and *Buck*, were lost and the cruiser *Savannah* was damaged. (The other U. S. vessels were: *Boise* and *Philadelphia*, cruisers; *Benson*, *Bernadou*, *Cole*, *Dallas*, *Edison*, *Gleaves*, *Knight*, *Ludlow*, *Mayo*, *Niblack*, *Nicholson*, *Plunkett*, *Rhind*, *Trippe*, *Wainwright* and *Woolsey*, destroyers.) The Fifth Army made no real progress until the latter part of September, when began the slow advance that brought it to the Cassino line by winter. On Italy's other coast, the Eighth Army made a little more rapid progress, thanks to a "leapfrog" landing at Termoli Oct. 4. A similar landing by the Fifth Army at Anzio and Nettuno, just below Rome, Jan. 22, 1944, on the other hand, failed to produce immediately favorable results. Meanwhile, during the first half of September, over 100 Italian warships went to Allied ports in accordance with the terms of surrender (for details, see chapter on Italy) and warship-aided Allied forces occupied Sardinia and Corsica.

To return to the Pacific, on March 2-3 (1943), three Japanese flotilla leaders, seven destroyers and twelve merchantmen crossing the Bismarck Sea miscalculated the course of a protecting storm and were caught in the clear by specially trained two-plane American bomber teams (one to strafe and the other to bomb split seconds later). The entire convoy and scores of defending fighters were destroyed. Otherwise, in Gen. MacArthur's Solomon-New Guinea area, the months after Guadalcanal were a period of unspectacular Allied infantry advance from Buna (Japanese thrusts toward Port Moresby and into Papua had been turned back in 1942) and steady bombing of Buin, Rabaul, Wewak and other enemy bases. However, on June 30 Marines stormed Rendova Island, opposite key Munda airfield on New Georgia, and Army troops landed at Nassau Bay to crack the defenses of Salamaua. Both opened drives with the ultimate object of neutralizing Rabaul.

The day after seizure of Rendova—a matter of 24 hours—the Marines landed on Vangunu Island. Army troops landed on New Georgia, key to the central Solomons, July 5. Vella Lavella was taken (without opposition) early in August, Arundel in August-September, Kolombangara at the beginning of October. The American offensive moved into the northern Solomons Nov. 1, with a Marine landing on the west coast of Bougainville. These operations touched off several naval battles, none, however, involving as large enemy forces as the struggle for Guadalcanal. The first, in Kula Gulf July 5-6, resulted from an enemy attempt to reinforce New Georgia and cost the U. S. the light cruiser *Helena* and the Japanese, two light cruisers and seven destroyers. The attempt to reinforce New Georgia was repeated a week later, leading to another Kula Gulf battle (July 12-13). This time, the Japanese lost a cruiser and

three to five destroyers; U. S., lost destroyer *Gwin*. A third attempt, July 19, cost the enemy still another destroyer. The next day Army and Navy planes sank a cruiser and two more destroyers in Vella Gulf. Enemy convoys to Kolombangara and Vella Lavella respectively were intercepted Aug. 7 and 17-18. A cruiser and two or three destroyers were sunk in the first action and a destroyer and a number of troop barges in the second, without American loss. On Oct. 1-3, U. S. destroyers attacked and sank or badly damaged more than 40 barges and a gunboat assembled in Vella Gulf for a reverse movement, evacuation of the trapped Kolombangara garrison. The garrison's fate was sealed three days later by the rout of a rescue force of a leader and eight destroyers, of which the leader and two destroyers were sent to the bottom. The next Navy encounter with the Japanese came in the early hours of Nov. 2, when the U. S. squadron protecting Marines landed on Bougainville intercepted a Japanese squadron of two heavy and two light cruisers and eight destroyers 40 miles west of Empress Augusta Bay. In a two-hour duel, a cruiser and four destroyers were sunk at a cost of minor damage to the American vessels. On Nov. 24, U. S. warships ranging the sea between Bougainville and Rabaul encountered another Japanese squadron and sent down four to six destroyers. As a result of these losses, little opposition was offered to a U. S. landing in the Green Islands Feb. 14, which not only brought Rabaul within easy plane range but cut off enemy forces remaining in the northern Solomons from Rabaul and Truk.

On Sept. 6 (1943), not ten weeks after the Nassau Bay landing, American and Australian troops "leap-frogged" along the New Guinea coast again, to a point near Lae; again, Sept. 22, to within six miles of Finschafen; to Saidor, Jan. 2, 1944, and to Yaula Village, 30 miles nearer Madang, one of the chief enemy bases in New Guinea, March 7. Even before these amphibious operations cleared the Huon Peninsula, Allied New Guinea forces turned north. Troops of the U. S. Sixth Army seized a beachhead at Arawe, on the south coast of New Britain, Dec. 15. Marines landed at Cape Gloucester on the crescent-shaped island's opposite shore Dec. 26. Then on Feb. 29, U. S. Army troops jumped the Bismarck Sea to Los Negros in the Admiralty Islands, west of New Ireland. Manus, the largest Admiralty, was invaded March 15, only a few days after Cape Gloucester Marines "leap-frogged" further along the New Britain Bismarck Sea coast to the Willaumez Peninsula. On March 22, another force of Marines went ashore on Emirau Island, northwest of New Ireland. Emirau's capture simultaneously completed the ring around Rabaul and brought new danger to Truk, only 600 miles to the north.

A remarkable feature of operations in the Southwest Pacific since December, 1943, has been the impunity with which American and Australian warships can cruise the area. Even destroyer forces were able to shell enemy strong-points in broad daylight without reprisal. There was likewise no substantial opposition to the great U. S. naval forces which carried out the Central Pacific offensive of 1943-44. The invasion of the Gilberts was foreshadowed Sept. 1 and 18-19 and Oct. 5-6 by progressively stronger task force attacks directed at Marcus, the Gilberts and Wake respectively. Only six weeks later, Nov. 20,

Marines stormed Tarawa and Army troops, Makin. A third Gilbert atoll, Abemanna, was taken Nov. 22. The Marshalls were pounded by carrier task forces in the first week of December and, with the support of land-based planes from the newly-won Gilberts, again in the last week of January, when the U. S. Navy came to the Marshalls to stay. On Jan. 31, the Army and Marines jointly invaded Kwajalein, largest of the group. During the conquest of Kwajalein, which took a week and was the first territory Japan held before the war to be seized by the Allies, the Navy continued to pound the other Marshalls and also dispatched its first surface bombardment force to the Kuriles. Then, Feb. 16, the Pacific Fleet put on its most dazzling display of power with a surprise attack on Truk. In the two days the attack lasted, 23 enemy vessels (two light cruisers, three destroyers, two gunboats, an ammunition ship, two oilers, eight cargo vessels and five other ships) were sunk, six were probably sunk and eleven damaged. The Truk raiders continued on into Japanese waters to attack Saipan, Tinian and Guam in the Marianas, Feb. 22. Meanwhile, still another task force landed an Army-Marine team on Eniwetok, westernmost of the Marshalls, Feb. 17. The seizure of Kwajalein and Eniwetok placed Kusaie, Ponape, Truk and other Japanese bases within reach of land-based American planes.

The Japanese fleet's failure to resist was a consequence of the overwhelming American superiority, which in turn was compounded of the massive production of American shipyards and of the heavy losses inflicted on the Japanese in more than two years of war. American submarines have contributed substantially to Japanese losses. U. S. undersea craft at the start of the war numbered about 120, of which two-thirds were suitable for raiding in Japanese waters. Thanks in part to abnormally low losses throughout 1942 (resulting perhaps from defective enemy anti-submarine equipment), the trans-Pacific cruiser fleet totaled 150 or more in the spring of 1944. At that date, they had sunk more than 475 Japanese vessels, about 40 per cent of the 1,065 enemy

ships claimed since Dec. 7, 1941, in U. S. Army and Navy communiques.

Besides the surrender of the Italian and retreat of the Japanese fleet, the last half of 1943 saw the total elimination of Germany's small but well-built battleship force. Some time early in the year or perhaps in 1942, Gneisenau was taken to Gdynia, where she was dismantled, evidently as a result of bomb damage, leaving *Tirpitz* and *Scharnhorst* the only German capital ships in commission. *Tirpitz* was permanently disabled in September by torpedoes from midget British submarines which penetrated Alten Fjord in northern Norway, where she based. *Scharnhorst* was sunk the day after Christmas by warships of the British Home Fleet in an action which matches for skill any in the annals of the Royal Navy. *Scharnhorst* fell into a trap which the British had patiently laid over and over again for two years without result. Early Dec. 26 she made an attack on a Russia-bound convoy near Bear Island. Cruisers of the convoy screen drove her off, and she steamed eastward to get ahead of the convoy for another try, apparently in the belief that Arctic winter darkness would enable her to escape *Duke of York* which she knew was just over the horizon. However, not only was her second attack unsuccessful, but when she turned south to return to her base, she was unable to shake British cruisers shadowing her. *Duke of York* in the meantime was steering an intercepting course and came up with her shortly before 5 P. M. The two ships exchanged fire at a range of about six miles. *Duke of York* obtained hits which slowed *Scharnhorst* to twenty knots, but *Scharnhorst*, the faster ship to begin with, drew out of profitable range before *Duke of York's* shots could take effect. Fire therefore ceased about 6:30. Fifteen minutes later, however, the destroyers *Saumarez*, *Savage*, *Scorpion* and *Stord* scored three hits on *Scharnhorst* in an unsupported torpedo attack. *Duke of York* closed and reopened fire at 7 P. M. At 7:32 P. M. *Duke of York's* guns were silenced to allow the cruisers *Jamaica* and *Belfast* and destroyers to finish off the last Nazi capital ship.

BATTLE OF THE ATLANTIC

UNQUESTIONABLY, the most important naval campaign of World War II has been the defense of Allied shipping against German attack. Victory in the so-called Battle of the Atlantic—more properly, the Battle of Transport—was requisite to our assuming the offensive against both Germany and Japan. Failure to furnish supplies promptly and consistently would have compelled England to surrender at once.

The continuing German effort to destroy the Allied merchant fleet fluctuated widely in intensity and effectiveness before the tide finally turned in our favor in the late spring of 1943. The opening gun was fired within a few hours of Britain's declaration of war, when a U-boat torpedoed the passenger liner *Athenia*, but for the first seven months, losses were small. Germany lacked

suitable bases and, in keeping with the "phony war" policy behind which she masked her preparations, held back many of the few submarines she then had. With the occupation of Norway and collapse of France, however, Allied losses shot up to several hundred thousand tons gross a month—far more than could be replaced by new construction or other means. Losses stayed almost at that level, with brief interruptions, until the invasion of Russia in June, 1941. They then dropped for several months; Nazi U-boats and planes were busy in the Baltic. But when the Wehrmacht reached Leningrad at the beginning of September, German air and naval forces returned to the Atlantic and losses went up again. Four months later, shortly after Pearl Harbor, the U-boat fleet extended its operations to the western Atlantic. Because the United States had

no effective means of immediately answering this threat hundreds of vessels were destroyed in a few months. Thus in 1942 Allied losses reached the almost incredible figure of 8,000,000 gross tons (unless otherwise indicated, all tonnage figures in this chapter are gross tons). Rapidly expanded as it was, new Allied construction did not equal losses until late in the year, by which time sinkings had finally begun to decline. In January, 1943, Adm. Karl Dönitz, German submarine chief, was elevated to command of the entire Nazi navy. Accordingly, a still more intensified U-boat campaign was anticipated. However, new Allied counter-measures proved effective and the new crisis never materialized. Losses were heavy, but not excessive, in the first few months of 1943. After that, they fell off sharply. The total for the year, according to a joint Anglo-American statement, was 60 per cent under 1942. By the beginning of 1944, only one of every thousand merchantmen was failing to reach its destination.

So far, no figures have been released to indicate with any precision the overall toll the Germans have taken. It certainly approaches 20,000,000 tons, half again as much as the Allies lost in the first World War and more than half the shipping afloat in 1939 which then or later became available to the Allies. Thanks largely to the phenomenal 13,000,000-ton output of American yards in 1943, however, almost twice as much new shipping has been completed since the outbreak of the war as has been destroyed. The Allied merchant fleet today is very nearly as large as the whole world merchant fleet in 1939 (some 60,000,000 ocean-going tons).

As other phases of the war, the Battle of Transport picked up in technique roughly where 1918 left off. Even before the expiration of Chamberlain's get-out-of-Poland ultimatum to Hitler, the British Admiralty began organization of convoys on the 1917 model. German means were at first not new either; submarines operated singly and considerable reliance was placed on magnetic mines. The latter have been described as a new device, but were actually developed by the U.S. Navy in 1918; the principal innovation in 1939 was the use of planes to plant them. After the fall of France, however, the Germans revealed many advances in the weapons and techniques of war against shipping.

Since the summer of 1940, U-boats, which are responsible for about three-quarters of Allied ship losses, have generally operated in "wolf packs" of as many as 20 craft each. It has been suggested that the pack was devised to overcome a lack of commanders sufficiently trained for individual operations, but this is unlikely as fleet operations require still greater skill. The submarine pack was originated by Admiral Dönitz as an answer to the convoy. Tactics were simple but, for a time, effective. One or more members of the pack would seek to feint the convoy's escorts (which had long since proved easily able to deal with single submarines) out of position, while the remainder attacked from another direction. Long-range bombers, most frequently of the four-motored Focke-Wulf 200K *Kurier* type, served as the pack's eyes. To date, as far as known, the pack is exclusively German; no other

navy seems to possess the required means of underwater communication.

Aside from bombing of bases and factories, which could not be expected to have an immediate effect, and mine barrages, nullified by the circumstance that Germany had ports fronting directly on the Atlantic and was no longer bottled up in the North Sea, the only reply then known to the U-boat pack was an escort sufficiently strong to parry the feint and main attack simultaneously. At that time, however, Britain was weak in anti-submarine craft. At the beginning of the war, the combined Anglo-French fleet commanded no more than a thousand escort vessels in contrast to the many thousands flying Allied flags in 1918. This number had been further reduced about 25 per cent by the surrender of France; reduced again by losses in the evacuation of Dunkerque, in which over 70 British destroyers alone were sunk or heavily damaged; and, in effect, reduced still more by Italy's entrance into the war. The wartime British naval construction program meanwhile had been conceived along the same modest, unhurried lines as other war activities under the prime minister-ship of "Peace in Our Time" Chamberlain. Though now sped up, British shipyards would not produce large numbers of escorts for many months. At one point, Britain was so short of anti-submarine craft that sizable convoys had to be entrusted in mid-Atlantic to a single armed merchant cruiser. Hence the wolf pack, then comprising only three or four craft, scored repeated successes.

Amid this crisis, on Sept. 3, 1940, President Roosevelt transferred 50 overage U.S. destroyers to the Royal Navy in return for base rights in eight western hemisphere British colonies. Further U.S. aid was extended the next year. Greenland was taken under American protection in April. In May, American warships initiated plain language position broadcasts of German submarines found in the western Atlantic. In July, we took over for the British garrison in Iceland and, in October, American patrol vessels were ordered to sink Axis submarines on sight. These steps all helped. But it was not until the United States was at war, and British and American yards together decked the oceans with escorts of new, more powerful types such as the American DEs and British Hunts and frigates (the earlier American PCs and SCs and British corvettes had not been especially successful) that the inroads of the pack fell off. Final victory in the Battle of the Atlantic was brought about in 1943 by development of the escort aircraft carrier.

In 1941, the U.S. Navy experimentally converted a number of Maritime Commission C-3 cargo ships into auxiliary aircraft carriers as a means of supplementing its sea-going air power. The U.S. fleet was deficient in carriers and the giants then under construction would not be ready for some time. The easily-built baby carrier quickly proved herself invaluable not only as an antidote for submarines but for transporting planes, providing air cover during landings and other important missions. The carrier's score or more of depth-charge-carrying scout or torpedo bombers made it extremely hazardous for submarines to surface within fifty miles in conditions of fair visibility or better. A submerged submarine, of course, cannot overtake even the slowest convoy over such a distance. Quantity orders for the junior carriers were placed

shortly before Pearl Harbor. By early 1943, enough had come from the ways to dispatch one with every considerable group of ships crossing the Atlantic. The wide gaps between the shore-based plane and blimp patrols operating from the U.S., Canada, Newfoundland, Greenland, Iceland and Britain were closed. Finally, the escort carrier was reinforced by other planes flying from a new British base in the Azores. The Royal Navy has also recorded spectacular successes with another new weapon, heavy sloops employing special and still secret "killer group" tactics. Throughout this period the RAF Bomber Command and the U.S. Eighth Air Force were attacking U-boat factories and repair bases with ever-increasing weight of bombs and frequency. German counter-measures such as the famous concrete "sub garages" at the repair bases minimized the damage. Nevertheless, Allied bombing was doubtless of some effect, too.

Besides striking down the submarine, the escort carrier has greatly reduced the toll of shipping once taken by German planes. During 1940-42, Luftwaffe torpedocraft inflicted heavy losses on convoys bound for Malta or Russian Arctic ports, and long-range bombers were a frequent nuisance as much as 800 miles off France. To minimize the former, Britain and the United States had to draw upon a small stock of fleet carriers. To deal with the latter, the RAF and Admiralty devised the interesting makeshift of placing a Hurricane fighter (the *Catapult fighter*) launched by catapult aboard at least one vessel in each trans-oceanic convoy, a scheme which was not altogether practical because the plane could not be retrieved. Both problems have been solved by the escort carrier. In combination with the heavy AA batteries of special flak ships and the merchantmen themselves, carrier fighters have made the Nazis pay a high price for every vessel sunk en route to Murmansk, and have made successful Atlantic air attacks a thing of the past. (The Mediterranean has been made safe, of course, by Allied occupation of Italy).

Although the Nazi sub- and over-sea fleets have sunk more vessels than did the Kaiser's and gravely threatened the United Nations, it should be emphasized that at no time were they able to precipitate a crisis comparable to April, 1917, when one of every four ships leaving a British port was sent

to the bottom and England had food for only six weeks. Even in the worst months, on the most dangerous routes, the greater part — usually much the greater part — of the ships and goods dispatched got through. Thus 90 per cent of the vessels and cargo sent to Russia via the northern route in the first year of the Nazi-Soviet struggle reached their destination safely. To the end of 1942, First Lord of the Admiralty A. V. Alexander reported early in 1943, nineteen major convoys had been rammed through to Murmansk alone by the "Blue Nose Fleet," the Royal Navy Arctic squadron. The record of troop movements is even more impressive. Excluding the Dunkerque operation, in the first four years of the war, 3,000,000 British soldiers were moved with a loss of only 1,348. Vastly larger numbers of Americans have been transported overseas with equally small losses, most of the casualties occurring in the sinking of a single unnamed transport which cost a thousand lives. In all of the many Allied landing operations, losses en route have been practically nil; most of the comparatively few we have suffered occurred during the landings themselves. To cite some of the few overall troop and cargo movement figures available, between September, 1939, and September, 1942, the enemy succeeded in sinking only one two-hundredth of 140,000 Allied merchantmen traveling 125,000,000 ship-miles in 6,000 British-escorted ocean convoys.

The Allies were able to guarantee the safety of most major convoys even in 1940 thanks in great part to the RAF Coastal Command. The Coastal Command, which is now under Admiralty operational control and combines functions divided in the U.S. between coastal AAF and shore-based Navy units, has carried a large share of the burden of patrolling the waters adjacent to Britain and such British-held points as Gibraltar, duties which absorbed endless hundreds of surface craft during the last war. Thus, notwithstanding the general paucity of escort vessels, massive protection could be provided for the most important ship movements—two escorts for every merchantman bound for Murmansk or Archangel, 350 for the 500 transports and supply ships that brought the Allied expeditionary force to the Mediterranean coast of Africa in November, 1942.

U. S. NAVY TO WORLD WAR II

AN ocean-going navy is generally accepted as America's first line of defense. This has been the case, however, only for the past fifty years. Until 1890—the date which marks the passing of our western frontier—we were engaged in continental expansion and had little interest in naval matters. For the most part, the Navy was a small commerce protection force, at times defunct in all but name. Paradoxically we, a nation that abhorred "entangling alliances," were content to depend upon alliances, unwritten but no less real, with Britain or France for primary protection and did not become naval-minded until we

were a leading industrial power. Even so, battle at sea is warp to the wool of our national tradition.

The Navy goes back to our War for Independence, when in September, 1775, three months after Bunker Hill, Commander-in-Chief Washington armed six small schooners to intercept British transports bringing supplies to the Redcoat garrison he had besieged at Boston. These schooners—*Franklin*, *Harrison*, *Lee*, *Lynch*, *Warren* and *Washington*—were the first American war-ships. Three months later, the Continental Congress established a United

Colonies Navy which, after the Declaration of Independence, became known as the United States Navy.

Besides the six schooners, which remained under Washington's command until the British gave up Boston early in '76 and were then discarded, the first colonial fleet consisted of seven hastily armed merchantmen. They were *Alfred* (the flagship of Commodore Ezek Hopkins, first Navy commander), *Andrew Doria*, *Cabot*, *Columbus*, *Hornet*, *Providence* (John Paul Jones' first ship, a sloop donated by Rhode Island) and *Wasp*. About thirty-five other vessels joined them during the next five years, some likewise ex-merchantmen holed for guns, some purchased, built to order or otherwise acquired in France by the colonies' eminent and wily ambassador, Dr. Franklin, but the majority built-for-the-purpose in American yards.

Little was expected of the Revolutionary navy against the colossus of the British fleet. No more than a dozen of its ships ever were ready for sea at once and, except for glorious but rotten 40-gun *Bon Homme Richard*, the largest were 32-gun frigates, analogous to present-day cruisers. Moreover, under the soon-bankrupt Continental Congress, the naval service was ineptly managed. By 1780, nearly the entire fleet had been lost. The infant republican navy, however, produced two of history's greatest sea fighters, one the well-remembered John Paul Jones, another, the all-but-forgotten Augustus Conyngham. Scottish-born Paul Jones raised beads of frenzied sweat on England's brow by his daring invasion of British coastal waters in the 18-gun sloop *Ranger* in 1778. Then, in 1779, in *Bon Homme Richard*, despite a treasonous mid-battle attack on him by the American frigate *Alliance* and her megalomaniac French captain, he bested *H.M.S. Serapis*, a new frigate, in one of the bloodiest ship-to-ship combats in the age of sail. Conyngham, the "Terror of England," took 60 or more British merchant ships in two years of cruising (1777-9) off the coast of Europe in the French-built, 10-gun *Revenge*. The prize-money brought by his captures financed the entire American diplomatic service in Europe. He was never caught.

The Continental navy was only a part of Revolutionary activity afloat. Several of the states, notably Massachusetts, Pennsylvania and South Carolina, maintained navies of their own, Massachusetts giving the nation Edward Preble, the martinet who trained the heroes of 1812-14. Soldiers and citizens also took to the water whenever necessary and possible. Soldiers, in fact, fought the one most decisive naval battle of the war, an engagement on Lake Champlain in upstate New York which few histories mention because the Yankee commander was future traitor Benedict Arnold. Late in the spring of 1776, Gen. Arnold was sent on an ill-advised expedition to take Quebec. He failed and, closely pursued by the British, turned back along Lake Champlain. Arnold divined that the British hoped to drive south far enough to sever New England from the other colonies. Accordingly, he decided to make a stand at the midpoint of the lake, assembling a patchwork lake fleet for that purpose. Arnold's flotilla was crushed by an overwhelmingly superior enemy squadron. However, although he and his band had to take to the woods, the damage they had inflicted compelled the British to return to the Canadian end of the lake for a

refit. By the time the British were ready for another try, it was 1777 and the colonists were ready, too. The British were met, cut off and captured. The victory at Saratoga brought recognition and help (money and the French fleet) from France.

Up to the middle of the 19th century, privateering was an accepted mode of war, respectively defined by perpetrator and victim as guerrilla warfare at sea or legalized piracy. Privateers were, as their name implies, privately-owned vessels authorized by government letters of marque to seize enemy ships and sell them as prizes, owners and crews sharing the proceeds. Privateering was the real focus of the Continental effort at sea, and, like the campaigning of such Continental guerrilla leaders on land as Light Horse Harry Lee, was most successful. Between 1776 and 1783, while the Navy lacked both ships and men, over 500 privateers put out to sea to prey on English commerce. The British attempted to suppress them by the time-honored measure of blockading their ports of origin, but in those days of wooden ships, every inlet of our forested coast was a shipyard. For every sea guerrilla run down, two were built. In seven years, Yankee private raiders took over 1,000 British merchantmen and twelve of the warships sent after them.

The Continental navy emerged from our birth struggle with only two ships, *Alliance* and *Hague* (ex-Silas Deane), frigates, in commission. Both were sold. From 1783 to 1794, there was no American navy. In that year, however, Congress — the United States, not the Continental, Congress — authorized a naval force, under the War Department, of six frigates and 2,000 officers and men to protect American commerce against Barbary coast pirates. By a fortunate coincidence they were complete in time for the undeclared war with France in 1798. A separate Navy Department was established and augmented by additional construction, purchase of merchantmen and temporary transfer of the Treasury Revenue Marine (now the Coast Guard).

The Navy began its renewed life auspiciously. The six frigates of 1794 — *Constitution*, 44 guns, *President*, 44, *United States*, 44, *Chesapeake*, 38, *Congress*, 38, and *Constellation*, 38 — were masterpieces of Joshua Humphreys, the greatest designer of his day, and the first Secretary of Navy was able organizer Benjamin Stoddert. This was well, for the Navy was soon knee-deep in action.

The new Navy's first task was that of clearing the Caribbean and western Atlantic of French privateers who were taking advantage of the XYZ affair and Napoleon's unfriendly attitude toward the United States to raid our coastal shipping lanes. The campaign brought five celebrated exploits. Lieutenant Isaac Hull of the *Constitution* invaded a fortified port of Santo Domingo with 90 men in a captured provision ship to seize a privateer too fast for frigates to catch. *Constellation*, under Thomas Truxtun, successively defeated two frigates, *Insurgente* and *Vengeance*. *Experiment*, a light 12-gunner built to follow privateers into shoal water, successfully repelled an attack by 12 boatloads (600 men in all) of privateers. *Enterprise*, her sister, under John Shaw, captured 12 privateers and two men-of-war on a single cruise.

The French "war" was ended by Napoleon's preoccupation with England and willingness to come to a settlement with the U.S. In 1801, however, the

Navy was back in action, when President Jefferson decided to make an end once and for all of the Barbary pirates. This war with the pirates, who were not corsairs in the accepted sense of the term, but North African Moslem states with quite powerful fleets, lasted three years. Little was accomplished the first two, owing to the incompetence of the first commanders of our Mediterranean squadron. But when Commodore Preble took over (1803), things began to happen.

Preble first settled matters with the Sultan of Morocco by slipping past guardian forts one night into the harbor of Tangier, the Sultan's chief city. When the Sultan woke in the morning, he found *Constitution*, *Philadelphia*, 38 (frigate), *John Adams*, 28 (light frigate), *Syren*, 16, *Argus*, 16, *Nautilus*, 12, *Vixen*, 12, and *Enterprise*, decks cleared for action, pointing double-shotted guns at him and his city. He lifted his finger only to sign Preble's terms.

While *Constitution* was refitting at Gibraltar for a blockade of Tripoli, *John Adams* was called home and *Philadelphia* fell into Tripolitan hands by mischance when she ran aground on an uncharted reef while chasing a corsair near Tripoli. But Preble set up his blockade and maintained it through a winter so wild that it drove every other western Mediterranean ship into harbor. More than that. Just as Preble himself had captured a fort-protected British brig during the Revolutionary war, one of his juniors, Stephen Decatur, took a ketch, *Intrepid*, into Tripoli one night and blew up *Philadelphia*. If we were not to have her, the enemy was not to, either. The next summer, with the aid of six gunboats and two smaller vessels loaned by the Two Sicilies (the kingdom of Sicily and Naples), Preble fought a series of vigorous actions with the Tripoli forts and gunboat fleet. By the time a relief squadron came out from the U. S., the Bashaw of Tripoli was more than ready to abandon piracy against the United States.

Even before the end of the Barbary war, we were embroiled in disputes with Great Britain over impressment of American seamen and restrictions on our commerce. Peace-loving President Jefferson did all he could to avoid war, even ordering American vessels from the seas. (He thought thus to avoid incident and at the same time strike Britain a blow; for, much as she abused it, Britain needed American shipping for the desperate struggle with Napoleon.) The years 1811-12, however, brought incidents which precipitated a resort to force: the British remonstrated when President, with Commodore John Rodgers, the Navy's ranking officer, in command, returned the unprovoked fire of a British sloop, *Little Belt*, and sank her, and British agents were caught promoting secession in New England.

In spite of its excellent state in 1798-1804, the Navy was materially unprepared in 1812. Only the six Humphreys frigates, three light frigates, six vessels of 10 to 16 guns and two new sloops (*Hornet*, 18 and *Wasp*, 20) and a brig on Lake Ontario were in commission. In the intervening years the country had gone mad over a type of one-gun gunboat, shoals of which would protect every port from every harm. The Navy virtually abandoned conventional development to build upwards of 200, none of which was of any use whatever. Moreover, the Navy was embarrassed over the Chesapeake affair.

The warship had embarked on a cruise in 1807 in such a state of unreadiness that, when stopped by a British vessel searching for "deserters," she was able to fire only one shot "for the honor of the flag" before being compelled to strike. President Madison was of a mind to order the fleet to port for the duration and confine our naval efforts to privateering. Fortunately, he was persuaded otherwise. However poor in other respects, the Navy had a body of unusually fine officers, the men trained and promoted to command by Preble in the Barbary war. In the years that followed, they compiled a record which stands out in sharp relief against a background of American disaster on land.

Early in the war four of Preble's protégés inflicted on the Royal Navy its first defeats in equal combat in a generation. First Hull, of the Santo Domingo raid, in *Constitution*, crushed *Guerriere*, 38. Then Jacob Jones (who had the hard luck to be run down by a British ship-of-the-line before he could re-rig for escape) in the *Wasp* took the sloop *Frolic*, a heavier ship. Next, Decatur, *United States*, defeated and captured *Macedonian*, 38, and finally William Bainbridge, who had lost *Philadelphia*, made amends in *Constitution* by besting *Java*, 38.

Prior to the *Guerriere's* defeat, the Lords of the Admiralty had shown contempt for American naval efforts. Stung by their reverses, the British clamped a tight blockade along the coast, locking up many of our frigates for the rest of the war. The year 1813 saw comparatively little action at sea, and most of that unpleasant from the American point of view. In the only frigate fight, *Chesapeake* was lost to *Shannon*, the one ship in the Royal Navy whose gunners could match American marksmanship. Two smaller vessels, *Argus*, 16, and *Viper*, 10, which ran the blockade, were also caught. But *Hornet*, under the same James Lawrence who was to lose *Chesapeake* and cry "Don't give up the ship" later in the year, sank *Peacock*, the fastest warship in British service, off Guiana; *Enterprise* (called *Lucky* by her sailors as is her carrier name-sake) with another of Preble's trainees, Lieutenant Burrows, in command, took *Boxer*, 12, off the coast of Maine.

Although 1813 brought no major victory in the Atlantic, it was the year of Oliver Hazard Perry's great triumph on Lake Erie. On land, the war had developed into a contest for possession of the wilderness region from Lake Champlain to Lake Michigan. As in 1775, it began with an unsuccessful attempt to seize Quebec. Then the British captured Detroit. This was a serious blow, as Detroit stood at the junction of Lakes Huron and Erie, the main east-west waterway. It could be redressed only by our gaining naval command of Lake Erie. The man Madison sent to accomplish this was Perry, the only non-Preble man to distinguish himself in the war. When Perry arrived at his headquarters, Presqu' Isle (Erie, Penna.), he found the makings of a good fleet, but one which was divided between Buffalo and Presqu' Isle. A British squadron stronger than either of the American groups patrolled the lake; moreover, Redcoats held a fort covering the exit from Buffalo. Perry was also woefully short of men. The Presqu' Isle brigs were not yet ready for launching and Perry was faced with the difficult problem of finding shipwrights. The ships completed, he took the fort by a surprise attack, then moved the Buffalo ships and arms to Presqu'

He before the British were able to post their squadron at the Buffalo end of the lake. With his united flotilla, Perry blockaded the British, compelled them to meet him. Although outgunned, 64 to 53, he took the entire enemy squadron on September 10, 1813 — "We have met the enemy and they are ours, two ships, two brigs, one sloop and one schooner."

Perry having won the war in the west, it remained for another naval officer, Thomas McDonough, a Preble man, to win it in the north, a year and a day later, with a victory on Lake Champlain. While London was assembling the New Orleans expedition which was to be repulsed by Andrew Jackson, British troops and a British fleet drove down from the Canadian end of Lake Champlain in a repetition of the campaign attempted in '76-'78. McDonough met them with an almost equal force. At the end of a day of mutual slaughter, both fleets were near exhaustion. McDonough, however, had anticipated that neither fleet would be able to maneuver by sail in the waters he chose to defend. Accordingly, he had placed out anchors to enable him to turn his flagship, *Saratoga*, by kedging. This he did, presenting a new, untouched broadside. The British were unable to copy him and had to strike.

When blockade tied up our frigates, a new Secretary of Navy, William Jones, built a small number of light, fast vessels to break through the cordon and prey on English commerce. The first of these, *Adams*, a new light frigate, and *Frolic*, a sloop (named to commemorate *Wasp's* victim of 1812), were lost as well as two of the remaining older small craft, *Syren* and *Rattlesnake*. However, two of the new sloops, *Peacock* (also named to mark a victory) and another *Wasp* (third U.S.N. ship of the name), made remarkable cruises. In the summer of 1814, they roamed the Bay of Biscay and the coasts of England, taking a number of prizes. In addition, *Wasp* met and bested in the most desperate battle of the war *Reindeer*, a sloop of her own rate and reputed, pound for pound, the most efficient ship in the Royal Navy. A few weeks later she encountered a formation of three sloops at night and sank one, *Avan*, also 18. Her voyage a great success, *Wasp* disappeared a few weeks later without a trace. *Peacock*, after taking a specie-bearing sloop, *Epervier*, 18, off Africa, made fourteen captures under the nose of Britain's Home Fleet, then went around to India, raising hob with the fabulous British East India trade and the warships assigned to guard it. That summer, the frigates *President* and *Constitution* attempted to run the blockade. *President*, run aground in harbor, had no choice but to stand and take her licking when she encountered three frigates and a ship-of-the-line. *Constitution*, on the other hand, under still another of Preble's men, Charles Stewart, got away for a long cruise, leaving a path of burning British merchantmen in her wake. She wound up her fighting career (though she survives to this day) by victories over *Cyane*, 32, and *Levant*, 20.

As in the War for Independence, the Navy was augmented by a swarm of privateers who, in two and three-quarter years, took the astonishing total of 2,500 British ships. Again, the Royal Navy, which assigned 200 combatant vessels to the blockade of the United States, was powerless to stop them. Not only were our coasts still lined with innumerable ship-sprouting forested coves, but Yankee ingenuity had meanwhile evolved several ship designs of extraor-

dinary speed, among them the famous "Baltimore clippers." Such ships proved so elusive that, out of hundreds built, the British caught fewer than a dozen and these purely by mischance. Because the Navy signed its seamen only for a single voyage, privateers were well-manned with a nucleus of navy-trained personnel. Like their Revolutionary predecessors, the privateers even tangled successfully with men-of-war.

At the end of the war, all converted ships and many Navy regulars were sold and naval personnel was reduced to 4,000 officers and men. But this time, the Navy did not return to its previous state of complete neglect and desuetude. At the instigation of Secretary Jones, a board of three naval commissioners was established. Under this new administration work was begun on three line-of-battle ships and seven larger vessels. These, *Franklin*, 74, *Independence*, 74, *Washington*, 74, *Alabama*, 86, *Delaware*, 86, *New York*, 86, *North Carolina*, 86, *Ohio*, 86, *Vermont*, 86, and *Virginia*, 86, were the first capital ships built in American yards, except for *America*, 74, a Revolutionary War product given to France before completion, and *New Orleans*, 100, laid down in 1814 on Lake Ontario and abandoned shortly after the war.

The Navy's first post-war task was to suppress the North African and Caribbean pirates, who had become active again during the hostilities with Great Britain. Decatur settled the North African situation once and for all in the summer of 1815 by two important captures, including the Algerian flagship, *Meshouda*, 46, and by appearing in Algiers, Tunis and Tripoli harbors in such force that the local rulers quickly promised to cease attacks on American shipping. Thereafter the Navy sent a squadron to the Mediterranean each year as a gentle reminder. The Caribbean pirates were not put down until 1823-4, for Congress was slow in providing the light-draft schooners with which to follow picaroons in shallow island waters. Eventually the proper craft were available, and Captains David Porter (father of Civil War Admiral David D. Porter, and skipper of U.S.S. *Essex*, 32, on the famous 1812-14 cruise during which British privateers were cleared from the Pacific) and Lewis Warrington (*Peacock's* skipper on her famous cruise) were no less efficient than Decatur had been. In addition to such work, in which it was ably seconded by the Revenue Marine, the Navy sent out a West African squadron to suppress slaving, performed a number of surveying expeditions and, functioning as an arm of our diplomatic service, negotiated several commercial treaties, opened diplomatic relations with Turkey, China, and with the historic voyage of Commodore Matthew Calbraith Perry, younger brother of Lake Erie Perry, pried Japan loose from its policy of ardent isolationism.

In the last year of the War of 1812, Robert Fulton had built a steam-driven floating battery of 30 guns, *Demologos*, "Voice of the People," (later renamed *Fulton*), for the defense of New York harbor. The ex-*Demologos*, which was completed too late to see action, gave the U.S. Navy the honor of having the world's first steam-driven warship. But, save for a small steamer, *Sea Gull*, purchased in 1822 and armed for Porter's anti-piracy expedition, and a second floating battery, which was also named *Fulton* and mounted experimental Paixhans shell-firing guns of exceptional caliber, we did not have another

until the early 'forties, though steam had meanwhile come into wide merchant marine use. The aging heroes of yesteryear, who dominated the Navy, stubbornly clung to sail.

The dam of prejudice against steam began to disintegrate in 1839. In that year, through the influence of Matthew Perry and well-connected Robert F. Stockton, the Navy decided to use its first new ship authorization in a decade for the construction of three experimental steam vessels. One, *Union*, was a weird failure with horizontally revolving paddle-wheels, but the other two, *Mississippi* and *Princeton*, especially the latter, were great successes. *Mississippi*, finished first and therefore the first steam-driven ocean-going American man-of-war, was a paddle sloop of 10 guns. *Princeton* was of an even more revolutionary character. With the exception of two small test boats, she was the first ship of any kind to employ the screw propeller invented by Swedish-American John Ericsson. Her armament of 14 guns included two shell-firers of the then unheard-of caliber of 12 inches. But such advances were exceptional. Except for establishment of the bureau system in 1842 and the Naval Academy in 1845, the Navy of 1840-60 was stagnant.

The Navy's performance in the Civil war is the most significant chapter in our naval history. In detail, the record is replete with blunders and the general competence of 1812 was not equalled. Materially unprepared and, at the start, riddled with treason (a third of pre-war officers turning Rebel), the Navy kept the seas comparatively free of Confederate raiders, the only task for which it had adequate previous training. It set up and maintained an extraordinarily difficult and extensive blockade, carried out unnumbered landing operations and fought the greatest river campaign in history. In short, notwithstanding its inevitable unreadiness, it made a decisive, perhaps the most decisive, contribution to victory in our bitterest national struggle.

When Gen. Beauregard fired on Ft. Sumter and set in motion the chain of events resulting in Lincoln's proclamation of blockade against the South, the Navy had only 24 screw, 8 paddle and 27 sail, or 59 vessels altogether. Of these, 23 were out of commission and 28 on foreign stations, leaving but eight ready for service in American waters. The first problem, accordingly, was acquisition of ships. In less than a year, an energetic trio — George D. Morgan, John Lenthall and Benjamin Franklin Isherwood — provided over 200, a feat, considering the date, quite equal to what we have done today. Morgan, a buyer, bought enough merchant ships for conversion to set up a 3,000-mile blockade within a few months. Lenthall and Isherwood, hull and engine designers respectively, devised a "ninety-day wonder," a gunboat which could be constructed in three months' time.

As ships of Morgan's "soapbox navy" took their blockading stations, it became apparent that coal-burners could not cover 3,000 miles of coast without fueling bases. In August, 1861, therefore, a strong squadron under Capt. Silas Stringham levelled Rebel fortifications on islands off Cape Hatteras, landed Army troops, who seized what was left, and in November, an even more powerful force under Flag Officer S. F. Du Pont (the title Admiral was not authorized for the U.S. Navy until 1862) took Port Royal, N.C.

Stringham's and Du Pont's successes were the first clear Union victories and eliminated the blockaders' time-consuming runs back to New York for coal. Further, they led to a series of amphibious campaigns in which the Navy and a limited number of Army troops in half a year wrested from the Confederates nearly the entire barrier of islands that lines the South Atlantic coast; their seizure immeasurably lightened the blockade. The Rebels were able to hold only the entrances to Charleston, S.C., and Wilmington, N.C. The island forts guarding the former fell in 1863 to a grinding naval attack led by Admiral John A. Dahlgren, the famous gun designer, and those before Wilmington, to a fleet and troops under Porter in 1864. Once they were in Union hands, scarcely a gnat slipped through to South Atlantic ports and the armies in gray began to wilt for want of vital English industrial supplies.

When the Federals evacuated the Norfolk navy base at the start of the war, they were compelled by a combination of treason and incompetence on the part of local officers to scuttle the ships stationed there. When the Confederates took over, however, they found the finest of the scuttled and burned vessels, the screw frigate *Merrimack*, undamaged below her lower gun deck, to which she had sunk. So the Rebels raised and made her an ironclad.

The *Merrimack*, rechristened *Virginia*, was ready at the beginning of March, 1862, and on the eighth attacked the Union squadron at Hampton Roads. She quickly sank two sail ships, *Cumberland*, sloop, and *Congress*, a 44-gun frigate, and damaged the screw frigate, *Minnesota*, all of whose weapons were almost totally ineffective against her armored sides, then retired with the expectation of completing the work of destruction in the morning. But when she returned, she found a newcomer among the Union ships — *Monitor*, Lt. John L. Worden in command. *Monitor*, also armored and equipped with new, big rifles, fought her all day, gave better than she took, saved the squadron.

The overall strategy followed throughout the war by the Northern high command called for splitting the Confederacy along the line of the Mississippi and strangling the eastern part, head and heart of Rebellion. The first half of this plan produced the greatest river campaign in history, much of which was borne by the Navy and which was successfully concluded in 1863.

Union forces began the drive to seize the Mississippi valley before the war was six months old. Little was accomplished, however, until the Navy found James B. Eads, one of the unsung heroes of the war. Eads, the Henry Kaiser of his day, turned out a fleet of nine powerful river ironclads in the winter of 1861-2. With these, in February, 1862, Flag Officer Foote shelled into submission Rebel forts dominating the Tennessee River, one of the Mississippi's important eastern tributaries, and softened up forts on the Cumberland, another Mississippi branch for subsequent capture by General Grant. The next four months of campaigning opened the "Father of Waters" down to Memphis, where in June C. R. Davis, replacing Foote, who had been wounded in action, routed a Rebel river squadron in the only fleet action of the war. With four ironclads and four rams, Davis met eight fast gunned and ram-equipped enemy steamers and in a wild melee, sank or captured all but one.

Meanwhile, down at the other end of the Mississippi, the soft-spoken Flag

Officer, later Admiral, David Farragut, was making naval history. In April, 1862, with his flag flying in the screw sloop *Hartford*, Farragut ran through forts at the head of the river delta below New Orleans, smashed a Rebel squadron that included an ironclad ram, *Manassas*, more powerful than any of his vessels, which were all of wood, and took the city.

The Mississippi campaign did not progress well for a year after that, owing to a combination of unfavorable circumstances which neither Farragut, nor Admiral David D. Porter, who succeeded Davis upriver, nor Grant, the ablest Army commander in the west, was able to overcome. Intoxicated by his victory at New Orleans, Washington gave Farragut the impossible task of driving upriver from New Orleans without an army in support. Farragut protested for, above the great port, the Mississippi is hanked by high bluffs against which ship guns were useless and which could be taken only by land assault. His net accomplishment was the loss of several of his best ships. Farther up the river, Grant's efforts to take the highest bluff, Vicksburg, were frustrated by the strength of the position and the utter incompetence of many of his colleagues and subordinates, who also managed to hog down Porter. More than once, Porter was left out on limbs which nearly cost him his entire squadron. But in 1863, Farragut successfully ran forts at Port Hudson, La., and blockaded the mouth of the Red River, a western Mississippi tributary which was the main route for supplies from Texas. Other supply routes were cut by a force Grant sent down the west bank of the Mississippi under a new man who was to be heard from again, Gen. Billy Sherman. Meanwhile, Porter and Eads completed a huge new fleet which cleaned out the last Rebel islands of resistance upriver. Port Hudson and Vicksburg fell and Rebellion's back was broken.

In 1864, with the Mississippi cleared and Wilmington, the last open Rebel port on the Atlantic, about to be closed, the Confederates' main naval base became Mobile on the Gulf. Mobile was well-defended, with forts and a mine-field (mines were called torpedoes then) covering its bottleneck harbor mouth. The defending squadron included a big ironclad ram, *Tennessee*, with three more ironclads nearing completion. Farragut did not think his Gulf force strong enough to take the city, but decided to try. So on Aug. 5, with his flag still in *Hartford*, his veteran fleet steamed into the entrance of the bay. One of his monitors, *Tecumseh*, disobeyed orders, left the deepwater channel to go after *Tennessee*, struck a mine and sank. The leadship, screw sloop *Brooklyn*, stopped, throwing the rest of the squadron into confusion. Farragut saved the day by boldly ordering his ships to turn past *Brooklyn* right through the mine-field. ("Damn the torpedoes! Full speed ahead!") By some miracle, not one mine went off, the forts were run, the monitor *Chickasaw* hattered *Tennessee* into surrender, the rest of the Rebel squadron was disabled and Mobile was won.

The fall of Mobile and Wilmington ended significant naval operations other than the blockade. The "blue water" war had ended two months before, when Kearsarge, another screw sloop, sent the Confederacy's most famed raider, *Alabama*, to the bottom off Cherbourg. Throughout the war, the Confederates had been able to shake loose only a few raiders and these were all quickly rounded up. The only exceptions were three English-built vessels, *Alabama*,

Florida and *Shenandoah* (a fourth English-built cruiser, *Nashville*, was blown up in Charleston harbor by Monitor *Worden*, who went in after her in the monitor *Montauk*). *Alabama*, which never visited a Southern port, cruised for two years before she was caught. *Florida* cruised a year before she wandered into Bahia, Brazil, where screw sloop *Wachusett* was also a visitor. *Wachusett's* captain tricked *Florida* into firing on him, then disabled and captured her right there in port. *Shenandoah* raided the Pacific in the last weeks of the war; peace intervened before she could be run down. But these vessels actually accomplished little other than to provoke a serious dispute between Washington and London. We held Britain responsible for the damage they had caused and demanded reparations. Britain finally paid, although not before a combination of circumstances (chiefly, re-unification of the U.S.) induced London to follow international law, as we had done in 1862 in the *Trent* affair. On that occasion, the U.S.S. *San Jacinto*, hothead Charles Wilkes in command, had stopped the British mail steamer *Trent* on the high seas and removed Confederate agents Mason and Slidell, in flagrant violations of the rules of the sea. Lincoln reprimanded Wilkes; Mason and Slidell were released.

At its wartime peak, the Navy had 500,000 tons of ships and 60,000 officers and men. The greater part of the tonnage, ex-merchant vessels, was sold out in the years following 1865. Construction programs were also sharply reduced, only a score of ships being built or reconstructed between 1865 and 1875 and none at all between 1875 and 1882. However, seven large screw cruisers begun in 1863 and some other wartime hulls were completed. One of the cruisers, *Wampanoag*, with engines of radical design by Isherwood, set a mark of 17 knots, the first warship in the world to exceed 14 knots.

Notwithstanding *Wampanoag*, by 1882 the Navy was back in the familiar peacetime rut. Elsewhere the years 1855-85 witnessed extraordinary advances in naval technology. Besides the armored iron ship, they brought accurate long-range guns, smokeless powder, cemented armor and vastly improved engines, which navies abroad were hastily adopting. Consequently, our post-war construction slowdown put us farther behind than had the lethargic period of 1820-1860. Beginning in 1883, however, and in the seven years that followed, almost all the old vessels were replaced.

The first warships of the new Navy were dispatch boat *Dolphin* and the protected cruisers *Atlanta*, *Boston* and *Chicago*. The latter, designed by the English who wished to try them at someone else's expense, were slow, atrocious fuel-eaters, and employed an already outdated system of mounting guns. The dispatch, too, performed badly. But they flew the American flag, had American steel in their sides (ship plates were hard to obtain), belonged to the new era and led to vessels many times better.

Between 1883 and 1898, in addition to the four ships named, we built ten protected cruisers (analogous to light cruisers), three raiding cruisers (heavies), four armored cruisers (junior battleships), one monitor and four battleships, besides many small craft (gunboats, torpedo boats, the armored ram *Katahdin* and *Vesuvius*, which shot dynamite shells by compressed air).

In the last two decades of the 19th century the course of continental expan-

sion turned to interests beyond our ocean borders. Unhappily, these new interests were paced by a group of irresponsible jingoes, among them newspaper publishers Joseph Pulitzer and W. R. Hearst, who soon had us involved in a war whose justice is still questionable.

The incident which precipitated the war with Spain was the blowing up of the armored cruiser *Maine* (a legend persists that *Maine* was a battleship) in Havana harbor, Feb. 15, 1898. The responsibility for her destruction has never been fixed, but the jingoes blamed Spain and Congress declared war April 26. The war produced two notable naval encounters, Dewey's demolition of the Spanish eastern fleet in Manila Bay, May 1, and the destruction of a larger force, Spain's principal naval strength, off Santiago, Cuba, July 3. These gave the U.S. the Philippines and control of the Caribbean and decided the war.

The infinitesimal cost of our victories over Spain — six wounded at Manila and one dead and a few wounded at Santiago — has been cited as proof of American naval skill. Rather, it demonstrated Spain's naval weakness, well known to Dewey who later admitted he would not have invaded Manila Bay otherwise. American gunners averaged less than 10 per cent hits in the two battles and at Santiago, the ships hardly performed as a fleet. The next few years, however, brought a complete revision of fleet gunnery methods (the work of Commander William S. Sims) and equal improvement in fleet operations. The first decade of the 20th century also produced a departmental reorganization, establishment in 1909 of the Office of Naval Operations to control training and use of the fleet.

Unlike previous postwar periods, the years following the Spanish-American war saw no interruption of naval building. With the turn of the century we had become world- and fleet-conscious. Between 1898 and 1914, we completed 31 battleships, including ten dreadnoughts. (Four of these survive, *Wyoming* for one, now a training ship). The first all-big-gun main armament ship, the modern type of capital ship, was English, H.M.S. *Dreadnought*, laid down in 1906. The idea, however, was American, the work of a Navy Department engineer, H. C. Poundstone, who thought the prevailing custom of mixed armament on capital ships absurd and who suggested using another American idea, the superposed turret (introduced on battleships *Kentucky* and *Kearsarge*, class of '97, by then Lieutenant J. V. Strauss), to get enough big guns onto the ship. While our Navy was still pro-and-conning, Lord Fisher, First Sea Lord, grabbed the idea and built fast. Soon, however, we had *Michigan* and *South Carolina* and two dreadnoughts were begun each year to the World War.

The war with Spain had another important naval consequence. One of the Navy's principal units, *Oregon*, was on the west coast when hostilities began. A record run — ten weeks from San Francisco to Key West — brought her around the Horn in time to join Sampson's and Schley's squadrons before Cuba. It also effectively dramatized the need for a shortcut between the Atlantic and Pacific. A canal across the Isthmus of Panama had been a subject of discussion and negotiation since 1840, but nothing had actually been done to build one, apart from an attempt by de Lesseps, the French engineer, who had the Suez Canal to his credit. Securing the necessary land rights (by methods which

were perhaps more practical than legal), the U.S. sent Army engineer Goethals to dig, with Army doctor Gorgas to keep Goethals and his crews free of yellow fever. The canal was opened in 1915, adding in effect a couple of dozen battleships to the Navy, by enabling quick concentration in either ocean.

When war was declared on Germany in 1917, we had a Navy second only to that of Great Britain. The decisive Battle of Jutland, however, had been fought almost a year before and there was no occasion for fleet action. In the World War, the Navy played a less spectacular, if no less decisive, role than in any of our struggles except the Mexican War. Its principal foe was the U-boat. Although not particularly prepared, the Navy made three significant contributions to anti-submarine warfare. The first was a hydrophone for detecting submarines, devised by a board at U.S. submarine headquarters at New London. The second was an immense fleet of sub chasers (for which the regular building program was sidetracked) including the famed 110-foot SCs (not to be confused with today's SCs), Henry Ford's PEs ("Eagle boats") and, best of all, the four-stack flush-deck destroyers (many of which, however, were not completed until after the Armistice). The third, and perhaps most important, American naval contribution was the North Sea Mine Barrage. Since 1916, the British had kept the English Channel closed to U-boats by means of mines. They did not, however, feel inclined to undertake the vastly greater task of mining the other exit from the North Sea, between Scotland and Norway. But the Navy devised a special type of antenna mine, cutting by five-sixths the number of mines required, and in the summer of 1918 laid 55,000 of them (the British laid 15,000 more) at the upper end of the North Sea. Thus the Kaiser's U-boat fleet was bottled up.

At war's end the Navy resumed its regular construction program to assemble the greatest fleet in the world. But national reluctance to support large military budgets, coupled with traditional anti-navalism of the middle west and British willingness to accept parity, resulted in the Washington Treaty of 1922. This treaty scrapped 227,740 tons of pre-Jutland capital ships and 465,000 tons of new ships, most of them partly built, and provided for the conversion of battle cruisers *Lexington* and *Saratoga* to carriers. Among vessels scrapped were *Washington*, a fourth *Colorado*, expended as a target; six 43,000-tonners, *Iowa*, *Indiana*, *Massachusetts*, *Montana*, *North Carolina* and *South Dakota*; and four 42,500-ton battle cruisers, *Constitution*, *Constellation*, *Ranger* and *United States*.

There is a tendency on the part of naval men to blame the Washington Treaty and later London Treaty (1930) for the state of comparative unpreparedness of the Navy in the next decade and a half. The truth of the matter is that the nation did not want the biggest navy in the world, and did not, in fact, permit the Navy to build up to treaty limits. Even before negotiation of the Washington pact began, Congress with a weather eye on its constituents, repeatedly refused appropriations for naval construction. Under the circumstances we were fortunate to get paper parity. And so the Navy slipped into its traditional peace-time doldrums, not to emerge until 1933 and a world plainly beaded for war caused another revival.

U. S. NAVAL CONSTRUCTION

As a result of the greatest shipbuilding program ever undertaken, the United States is the first power of the sea today, the American fleet outranking the British by wide margins in most decisive categories. Thus, including vessels under construction but presumably well along to completion, the U. S. has 24 capital ships as compared with Britain's nineteen; 23 or more fleet aircraft carriers, double or better the number of corresponding British units; twice as many destroyers and destroyer escorts; at least three times the number of submarines; and over 50 escort carriers as compared with some 40. Only in cruisers are the U. S. and Royal navies approximate equals, although aggregate tonnage of the American vessels is greater. Many British combatant vessels, furthermore, notably destroyer escorts, old destroyers and most escort carriers, are American-built. On the other hand, the Royal Navy was at war two and a third years before the American and has had to fight under circumstances far less advantageous, with the result that the British have suffered war losses four times as great.

The U. S. Navy's expansion was begun in earnest only in 1940, after the fall of France. For seven years before, however, the Roosevelt administration had followed a policy of active naval construction which, while it did not add greatly to the Navy's tonnage, modernized it and laid the foundations for wartime growth. Soon after assuming office in 1933, President Roosevelt sponsored use of relief funds to build the Farraguts, first modern American destroyers. A more regular program was laid down in the Vinson-Trammell Act of 1934, which authorized *North Carolina*, *Washington*, and other replacements for over-age vessels, as permitted by the Washington naval limitation treaty. Following Japan's denunciation of the Washington and London treaties in 1936, Congress authorized a further 300,000 tons of new construction (135,000 for the *South Dakotas*, 40,000 for aircraft carriers, 68,750 for cruisers, 38,000 for destroyers, and 13,650 for submarines) under the so-called "equalizer" law of May 17, 1938.

The legal framework of the present Navy consists of six laws adopted between 1940 and 1943. The first, passed on June 14, 1940 as the Nazis approached Paris, authorized 79,500 tons of new carriers, 66,500 of cruisers and 21,000 of submarines, with the proviso that the Navy could transfer tonnage from one category to another up to 20 per cent. Total new tonnage allowed was 167,000, an eleven per cent expansion of the Navy's combatant tonnage. A month later, on July 19, Congress enacted the Two-Ocean Navy law, allowing a 70 per cent total expansion (1,325,000 new tons altogether). This law called for 385,000 tons of new battleships, 200,000 of carriers, 420,000 of cruisers (including battle cruisers), 250,000 of destroyers and 70,000 of submarines, with transfers from category to category permitted up to 30 per cent. Two acts, intended primarily to compensate for war losses, followed: the Acts of Dec. 23, 1941, authorizing 150,000 tons, and that of May 13, 1942, 200,000 tons — both unrestricted as to category. On July 9, 1942 Congress passed the Five-Ocean Navy law, providing

for a further 1,900,000 tons of construction: 500,000 for fleet carriers, 500,000 for cruisers, including battle cruisers, and 900,000 for destroyers and destroyer escorts. Finally, on May 26, 1943 Congress authorized 1,000,000 tons of landing and district craft.

On July 1, 1940 the Navy had 383 battleships, carriers, cruisers, destroyers and submarines, aggregating 1,313,000 tons. Including auxiliaries, the fleet numbered 1,076 vessels of 1,875,000 tons. In the next three years, 333 combatant vessels aggregating 1,117,054 tons were built. Other completions in this period were: 1,274 mine and patrol craft of 199,765 tons, 161 auxiliaries, 654 yard and district craft and 610,781 tons of landing craft (12,964 vessels). Consequently, despite war losses and transfer of a great many vessels to allied navies, on July 1, 1943 the Navy had upwards of 13,000 vessels of over 4,500,000 tons, including more than 600 combatant ships of some 2,000,000 tons. Deliveries during June, 1943 alone totaled 1,200 vessels, in comparison with five in June, 1940. The Navy virtually doubled its already formidable strength in those years. More than a million tons were added in the second half of 1943.

The enormous increase of ship construction has, of course, required an equal growth in manufacture of the equipment that goes aboard the vessels. Thus, production of torpedoes, one of the most difficult of all ordnance items to manufacture, rose from three a day in mid-1940 to the point where, in August, 1943, two Navy and five private torpedo plants turned out as many torpedoes as the U. S. manufactured during the entire World War. Ordnance production as a whole rose from \$46,000,000 in the last half of 1940 to more than \$1,000,000,000 in the first half of 1943. Aggregate horsepower of propulsive machinery installed in Navy ships between Jan. 1, 1941 and July 1, 1943 was 17,608,000, equal to all hydro-electric powerplants in the U. S. on Jan. 1, 1941. (Figures for naval aircraft production, which likewise increased steeply, are to be found in the chapter on naval aviation.)

Needless to say, such expansion would not have been possible without the development of a great many new methods of production. These are reflected in the time and man-hours of labor required for completion of different types of vessels today, as compared with the time previously required. Between the beginning and end of the Fletcher program, man-hours entailed in building each destroyer decreased from 1,500,000 to slightly over a million. The light cruiser *Santa Fe* required 5,700,000 man-hours for construction in 1942 as against 7,600,000 for her sister *Cleveland*, six months older. The 13,000-ton heavy cruiser *Boston* required only 24 months as against 41 for the 10,000-ton heavy *Wichita*, completed in 1939. Finally, 45,000-ton *New Jersey* was finished in 26 per cent less time than 35,000-ton *Washington*. Equally great improvement is shown in building records of 1943-44, although the total volume of construction began to decline late in 1943 as the Navy approached its goal of assembling incomparably the greatest battle fleet in history.

U. S. COAST GUARD

THE United States Coast Guard was founded at the suggestion of Alexander Hamilton, first Secretary of Treasury, by Act of Congress, August 4, 1790, as the United States Revenue Marine. Its purpose was to see that Yankee importers, who in defiance of British colonial tariffs had waxed patriotically fat on smuggling, didn't do the same with the customs laws of the new republic. In those days, customs duties were the chief source of government income; moreover, President Washington and Secretary Hamilton were determined to extend tariff protection to new-born American industries. The Revenue Marine was literally the nation's first line of defense.

The Revenue Marine, its title changed meanwhile to U. S. Revenue Cutter Service, acquired its present name in 1915, when it was merged with the Life-saving Service (founded 1878) by an act of Congress which specified that the Coast Guard, although under the Treasury Department in peacetime, "shall constitute a part of the military forces of the United States." The Department of Commerce's Bureau of Lighthouses was transferred to the Coast Guard in 1939 under President Roosevelt's second government streamlining plan, and the Bureau of Marine Inspection and Navigation (which checks seaworthiness and safety of ships and competence of maritime personnel) in March, 1942. Until July, 1942 the Coast Guard also operated the U. S. Maritime Service (technically a part of the Maritime Commission), merchant seaman training organization which is now in the War Shipping Administration.

The Coast Guard has fought in every American war since 1790, declared and undeclared, and in an astonishing number of them has managed to fire the first shot at the enemy. When the Civil War divided the ranks of all other services, every Coast Guard crew remained loyal to the Union.

In the undeclared war with France (1797-1807) Revenue Marine cutters took 18 of the 22 French vessels captured by American forces and assisted in taking two of the others. And it was the Coast Guard which, in the War of 1812 with Britain, made the first capture of a British vessel, the cutter *Jefferson* seizing the frigate *Patriot*, a man-of-war many times her own size and power. Another cutter, *Louisiana*, fired the final shot of the war at the Battle of New Orleans which, due to tardy communications, took place several weeks after the signing of peace.

In the years following the War of 1812, the Revenue Marine's principal task, aside from customs enforcement, was running down the pirates who then infested the Caribbean and the Gulf of Mexico. The most decisive blow of this campaign, which lasted until 1819, was the razing of Breton's Island, one of the most notorious of nineteenth century pirate lairs, by landing parties from the cutters *Louisiana* and *Alabama* (not to be confused with the Confederate raider of many years later). Revenue Cutter Service vessels even participated in an Indian war, joining the Army in chasing Seminoles through the Florida Everglades (1836-39). In the Mexican War (1846), cutters took

part in the blockade of Mexican ports, a function they were to perform again in the War Between the States. The cutter *Harriet Lane*, replying to General Beauregard's fire on Fort Sumter, was the first Union vessel to fire a shot.

When Seward purchased Alaska from the Czar in 1867, the Revenue Cutter Service was assigned the task of enforcing U. S. maritime laws in the Far North, providing medical and mail service to outlying points.

In 1897 the icebreaking cutter *Bear*, which Admiral Byrd took with him to the Antarctic some years later, brought help to an ice-bound American whaling fleet in Alaskan waters in an epic 103-day battle with the elements. A few years before the Coast Guard had been assigned the duty of enforcing in Alaskan waters the international treaties and American laws governing whaling and sealing, one of the few peacetime Coast Guard activities to be suspended for the duration.

In the Spanish-American War the Coast Guard cutter *McCulloch*, functioning as part of Dewey's fleet, got in the first shot at Manila. Cutters also patrolled the coasts of Florida and Cuba, carried dispatches and convoyed troop and supply ships.

In 1904, the Coast Guard (still called the Revenue Cutter Service) sent and received the first ship-to-shore radio messages, pioneering a form of communication which was to be made compulsory following the *Titanic* disaster in 1912. The *Titanic's* loss led to the establishment of an international organization for charting iceberg courses and warning merchant vessels in the North Atlantic steamer tracks. Virtually all the ships and men for the patrol were furnished by the Coast Guard which, contrary to some opinion, doesn't blow up icebergs. (To do so would require great quantities of dynamite and is unnecessary. Warning is sufficient.) War has not relieved the Coast Guard of this responsibility, although its peacetime practice of radioing their location in the clear has been dropped.

During World War I the Coast Guard functioned alongside the Navy in convoy work and, as a matter of fact, suffered a greater percentage of casualties. The cutter *Tampa*, sunk by one of the Kaiser's U-boats, was the second largest American naval loss of the war.

After 1919, when it was turned back to the Treasury Department, the Coast Guard was assigned the task of intercepting rum runners. How well it did the job was reflected in the exorbitant prices demanded for "imported" liquor.

President Roosevelt issued a proclamation making the Coast Guard a part of the Navy once more on Nov. 1, 1940. Only a few days later, the veteran cutter *Northland*, adhering to Coast Guard tradition, made the first American capture of this war, the *Boscoe*, a Nazi vessel masquerading as Norwegian for the purpose of planting a radio and weather station in Greenland. The Coast Guard has also carried out several of the most spectacular American actions against the U-boat. In February, 1943 the *Campbell*, one of our largest cutters

(bigger than the average destroyer), rammed and sank a U-boat in the North Atlantic. In May the *Icarus*, a cutter about the size of Navy PC boats, shelled and sent to the bottom another U-boat, bringing back 33 of her crew as prisoners. The *Spencer*, a sister of the *Campbell*, accounted for a third German sub.

Coast Guardsmen perform their duties ashore as well as at sea, guarding harbors, waterfronts, and even war plants working on Navy and Coast Guard orders. (In practice, the latter is done by swearing into the Coast Guard the plant police.) It was a Coast Guardsman, now Bo'sun's Mate, 2nd Class, John C. Cullen, who trapped the saboteurs landed on Long Island by a U-boat early in the war.

At present the Coast Guard operates 197 lifesaving stations, and in 1942 saved 8,928 lives. In peace and war it maintains thousands of lighthouses, lightships, buoys and other aids to navigation (dimmed, but not turned off for the duration, as in Europe, except in active combat areas, and increased in number by 1,100 during the year ended June 30, 1943).

Since the war, Coast Guard personnel has increased enormously, reaching a total in all ranks of approximately 175,000. Coincident with this growth, the Coast Guard now has its first three-star commandant, Vice-Admiral Russell R. Waesche. Like the larger services, it also has a woman's auxiliary, the Spars (a name derived from the Coast Guard motto, *Semper Paratus*), established Nov. 23, 1942. The Spars' commander is Lt. Cmdr. Dorothy Stratton.

Like the Navy, Coast Guard recruitment is ordinarily by voluntary enlistment, but since the beginning of 1943, personnel has been obtained through Selective Service. Testifying to the popularity of the service is the fact that applications from among selectees generally fill Coast Guard monthly quotas before the end of the first week of each month. The Coast Guard has seven schools for training non-commissioned men, located at Groton, Conn.; Manhattan Beach, N. Y.; Curtis Bay, Md.; Norfolk, Va.; New Orleans, La.; Alameda, Calif.; Port Townsend, Wash.

Coast Guard officers today come mainly from the ranks of enlisted men, those nominated as officer candidates taking a four-month training course at the Coast Guard Reserve Cadet School at the Coast Guard Academy, New London, Conn. A few officers are still commissioned directly from civil life. Through 1942, officers were also obtained by direct entrance of civilians into the Reserve Cadet School. Selective Service dried up the flow of such candidates quickly, however, since candidates had to be citizens (of at least ten years' residence in the U. S. if naturalized) between 20 and 30 years of age and single or with financially independent wives—in other words, perfect draft material. Hence, this method of procuring officers has been dropped.

Men who become officers in such manner hold reserve commissions. Regular officers are trained at the Coast Guard Academy, where the usual four-year course includes a lengthy sea voyage in the final year). Admission to the Academy is by competitive examination, and the age limits are 17 and 23. The Academy's cadet body normally numbers 300.

In addition to its regular and reserve forces, the Coast Guard has a large Temporary Reserve of water-wise civilians who devote one day a week to

volunteer Guard duty, and an Auxiliary which trains men for the Temporary Reserve. Unlike the Navy, the Coast Guard early availed itself of civilian assistance. Hence, in 1939 it formed the Auxiliary (which now, like the Coast Guard Reserve, operates under a law of Feb. 19, 1941). At first the Auxiliary was confined to boat-owners, who enrolled with their vessels and performed part-time duty. This arrangement was changed early in 1942, when the possibility of combat action against enemy submarines on both coasts made it advisable to give the Auxiliaries military status (they might otherwise have been classified as guerillas and subject to dangerous consequences if taken prisoner). Thus the Temporary Reserve (members of which wear regular Coast Guard uniforms when on duty) was formed and all Auxiliary functions except training and safety promotion were transferred to it. The Temporary Reserve is open to members of the Auxiliary possessing certain qualifications of training. In all probability it will be disbanded after the war; the Auxiliary, however, will undoubtedly be continued because of its value in teaching safe ship operation.

The Coast Guard Fleet has increased steadily, although not to the same extent as personnel, for Coast Guard construction has been confined to a 235 landing barges and transports turned over by the Navy up to mid-1943. program outlined before the war. The extra Coast Guard personnel mans the These vessels, however, remain on the Navy list. On June 30, 1942, the Coast Guard's own list counted about 275 armed vessels classed as cutters (65 feet in length or larger). Today the names of 375 cutters built or building have been made public, and there is an unspecified number of converted merchant ships. Some 400 yachts enrolled in the Auxiliary and now on active duty also fly Coast Guard colors. In 1943 ten 83-foot cutters were transferred to Cuba under lend-lease for the use of Cuban units cooperating in the patrol of Caribbean and Atlantic waters.

In 1919 Coast Guard Lt. E. F. Stone served as co-pilot on the epic flight of the NC-4 to Lisbon. The Coast Guard has since made active use of planes in carrying out its numerous duties. In November, 1941 Coast Guard pilots (trained at the Naval Air Training Station, Pensacola) flew 56 planes from ten air stations (Boston; New York; Elizabeth City, N. C.; Charleston, S. C.; St. Petersburg, Fla.; Miami; Biloxi, Miss.; San Diego; San Francisco; Port Angeles, Wash.). Forty-three of the 56 were "flying lifeboats" and the remainder were law-enforcement patrollers, trainers and transports. Rugged twin-engined flying boats, built mainly by Hall Aluminum, are designed to take off and land in heavy seas. Now the Coast Guard is not only receiving more "lifeboat" planes, but has been given equipment for a patrol bomber group, the first squadron of which was activated in July, 1943.

Regular, reserve and temporary reserve Coast Guard ranks are identical with Navy ranks, as are uniforms, with these exceptions: enlisted grades wear a Coast Guard shield on the right sleeve; officers wear shields wherever the Navy man wears a star (above rank stripes on sleeve and next to rank stripes on shoulder straps); and the officer's cap badge is a shielded gold spread eagle grasping a horizontal foulanchor in place of the Navy spread eagle over crossed anchors. Regular and reserve Coast Guard pay and allowances are

also identical with those of the Navy. The Coast Guard Auxiliary, however, has a special system of ranks (titles are functional, such as navigator, senior navigator, etc.) and the cap insignia for all is the Coast Guard emblem—crossed anchors in a lifesaving ring—with Coast Guard Auxiliary superimposed. (Auxiliary commissioned officers usually are Temporary Reserve officers as well and wear regulation Coast Guard insignia and badges, with sleeve marks denoting Auxiliary rank such as captain, vice-captain, etc.)

U. S. NAVAL AVIATION

SINCE mid-1940, the U.S. combatant fleet as a whole has more than doubled in strength. Meanwhile its aircraft carrier component has been multiplied by at least eight. When the two-ocean-navy law was passed (July 19, 1940), only six carriers were in commission. The number in service or nearing completion at the beginning of 1944 is 50 or more. The majority, to be sure, are of the smaller escort type, but eight are Essexes, more powerful than any carrier of 1940, and nine are 10,000-tonners equal in hitting power to 1940's *Ranger* or *Wasp*. There could be no better criterion of the growth of U.S. naval aviation.

By a reorganization carried out in the fall of 1943, U.S. naval air activities are grouped under a Deputy Chief of Naval Operations and the Bureau of Aeronautics. The former directs training and manning and, with others in the Office of Naval Operations, operation of the Navy's carrier forces, as well as its other air arms, the long-range patrol squadrons and the reconnaissance units that fly from battleships and cruisers. The Deputy Chief of Naval Operations, currently Vice-Admiral John S. McCain, is also responsible for general naval aviation planning. "BuAer," whose present Chief is Rear-Admiral De Witt Clinton Ramsey, engineers and buys the planes. The carriers themselves, however, and other surface vessels employed with planes, such as seaplane tenders, are designed and ordered by the Bureau of Ships.

The Office of the Deputy Chief of Naval Operations carries out its manifold functions through seven divisions. The largest are the Flight Division (encompassing aerology, logistical, navigation and other branches) and the Training Command. Another large division is the Naval Air Transport Service. NATS flies its own cargo planes, regulates airlines working under contract to the Navy. It is not nearly so large as its corresponding Army branch, the Air Transport Command, but it is many times larger than was any U.S. airline in 1939. Other divisions are Planning, Personnel, Air Technical Analysis (which studies combat reports) and Marine Corps Aviation.

The U.S. Navy early appreciated the airplane's potentialities not only for patrol and reconnaissance, but for gunfire spotting as well, something which, strangely enough, seems not to have occurred to Britain or Germany during World War I. In 1911, the Navy began experiments with a small catapult on

The Coast Guard, in the course of its peacetime duty, goes out to sea when many sturdier craft are running for home. The Coast Guardman goes to work when the weather is at its worst. Little wonder, then, that he is the most skillful of American seamen and that many of the best bad-weather pilots are reared in the Coast Guard. Little wonder that the Navy has called upon the Coast Guard for many of the most difficult and hazardous of war assignments which it has invariably dispatched with inordinate courage and skill.

a dock at the Anacostia Naval Station, Washington, D. C. These led to a flight in 1915 by Lt. Cmdr. H. C. Mustin from a catapult aboard the armored cruiser *North Carolina* (later the *Charlotte*), the first catapult launching from a ship. The *North Carolina's* catapult was removed when she went on active war duty. Catapult experiments, however, were renewed and successfully concluded immediately after the war. During this same period, Lt. John H. Towers, one of the Navy's first three pilots and now Vice-Admiral and commander, aircraft, Pacific Fleet, and other Navy airmen were developing the large patrol flying boat. Their efforts, which began with the Navy's first patrol flight in 1913, were crowned by the NC series of Curtiss flying boats. In November, 1918, an NC carried 51 people on a test flight, and in the spring of the following year, the NC-4 completed the first crossing of the Atlantic by air. Although Britain beat us to the aircraft carrier, the U.S. Navy made the first take-offs and landings on a ship. Eugene Ely, Curtiss test pilot, took off from a bow platform built on the scout cruiser *Birmingham* at Hampton Roads, Va., in 1910. The next year, Ely landed on a platform built over the stern of the armored cruiser *Pennsylvania* (later the *Pittsburgh*) anchored in San Francisco Bay. (The British made the first take-off from a moving ship, *Hibernia*, in 1912).

The first American aircraft carrier was the heroine *Langley*. Born as the collier *Jupiter* in 1911 (and a unique ship even then, for she was the first American naval vessel with turbo-electric drive), *Langley* was converted to CV-1 in 1920 by the Norfolk Navy Yard. She served as a carrier until 1937, when half her deck was removed and she was re-rated a seaplane tender. Meanwhile, of course, the Navy had acquired five other carriers, giving us at that time the most powerful carrier fleet afloat. The first two of these were the *Lexington* and *Saratoga*, ex-battle cruisers outlawed by the Washington Treaty. The others were *Ranger*, launched in 1933, our first built-for-the-purpose "flat top," *Enterprise* and *Yorktown*.

The U.S. Navy's best known contribution to aerial warfare is the dive bomber. The dive bomber evolved from tests with several different types of planes (mostly modified scouts and fighters) aboard the *Langley*, beginning about 1925 and leading to the Martin BM-1 and Curtiss O2C-1 in 1927, the first true dive bombers. Not so well known are other Navy achievements, the pio-

neering of the wheeled torpedo carrier, designed for the *Lexington* and *Saratoga*, and of carrier-based monoplanes, which made their appearance aboard our carriers in the latter 'thirties, several years before they were adopted by other fleet air arms.

The aircraft carrier is the most densely populated fighting ship, carrying not only men to operate the ship herself, but the hundreds required to man and serve her planes as well. The peacetime complement of such a carrier as the *Saratoga* was over 2,100. The *Saratoga* must now carry many more, for like other ships of the fleet, her AA batteries have been greatly increased, and extra personnel is needed in wartime for other purposes. All told, *Saratoga* or one of the new *Essexes* may have more than 2,500 men aboard.

A large U.S. carrier's air group, as the Navy calls a carrier's plane complement, would generally consist of four squadrons of 18 planes each, plus spares and utilities. There was some expectation that the *Essexes* might carry more, but this is doubtful owing to the growth in size of aircraft. The 2,000-horsepower Hellcat and Corsair fighters of today are considerably larger than their predecessor, the Wildcat. Before the war, each four-squadron group included one squadron of fighters (to protect the carrier herself), one of scouts (which the Navy generally designs for secondary employment as bombers) and two squadrons of bombers, either one torpedo- and one dive-bomber or both dive-bomber. The torpedo plane's spectacular successes, however, have probably resulted in the inclusion of a torpedo squadron in every group of this size. The giant 45,000-ton "battle cruisers" now building may also have four-squadron groups, for the Navy's announced intention is to take advantage of the CVB's huge deck and hangars to place larger, twin-engined planes at sea. No information has been released on the air groups of the third type of U.S. fleet carrier, the converted light cruisers (CVLs), but they are likely to consist of only three squadrons each, with the specific types of squadrons dependent upon the carrier's mission. Escort carriers, which originally carried only a single squadron, now carry a mixed unit of 20 to 30 craft, types again depending upon mission. For anti-submarine patrol, combinations of dive-bombers and fighters, and dive-bombers and torpedo bombers (carrying depth charges instead of torpedoes) have both been used.

The high death rate of aircraft carriers early in the war led many to question their permanence as a type. The carrier is undoubtedly an inherently vulnerable vessel. However, many of the early losses were due to inexperience, both in building and handling, as well as to the fact that a great many then in service were old ships. More skillful use of her ballast tanks, for example, would have prevented the wounded *Ark Royal* from capsizing, and two of our carriers might still be alive if our firefighters had been as well-trained then as they are now. Moreover, much has been done to reduce such sources of danger as broken fuel lines and partially filled gas tanks with air over the gasoline's surface. Details are restricted, but it is safe to say that there will be no repetition of the disastrous traveling explosion that turned the entire hangar deck of several of our ships into shambles in a few seconds. Finally, the carrier now has a much more adequate number of AA guns.

The last two years have even seen a narrowing of the traditional gap in performance between land and ship-based planes. Carrier-planes are generally somewhat larger than land-based craft of the same power, because of the limitation on landing speed. Furthermore, they require a great deal of extra gear for protection of the pilot in the event of a landing in the sea, etc. Such protective devices, however, have proved necessary even to the land-based planes that carrier craft encounter, for they, too, fight over water. Further, new flaps and high-lift devices are tending to eliminate the naval plane's need of oversized wings. Although U.S. Army and Navy planes are distinct in type, Britain has successfully operated modified Spitfires, known as Seafires, from carriers since 1941.

Up to the beginning of 1942, the Navy's non-ship-based patrol squadrons — which represent about 35 per cent of our naval air strength, with carrier squadrons representing 50 per cent and battleship and cruiser scouting units, 15 per cent — used long-range flying boats only. With its huge hull, however, the flying boat is slow, unwieldy and vulnerable. Consequently, flying boats have been replaced in combat zones by multi-engined landplanes of Army type. To date such types include the Consolidated Liberator and Lockheed Ventura. Others are to be added in the near future.

In 1939, the Navy's air fleet consisted of something over 2,000 planes. At the start of 1944, it numbered 23,000 and was still increasing. To man this fleet, the Navy has had to step up its pilot training program from an output of 500 a year to 2,500 a month, and other air personnel in proportion. In 1939, aside from a number of small reserve training fields, naval air training was centered in the single Naval Air Station of Pensacola, Florida. Today, the Training Command, headed by Rear-Admiral George D. Murray, operates half a dozen huge training centers and an endless chain of other stations. Navy pilots begin their training with a three-month period of pre-flight instruction at one of five colleges: St. Mary's and the Universities of California, Georgia, Iowa and North Carolina. Their primary training is given at 17 different fields, located on the sites of the above-mentioned reserve training centers, but not at all recognizable as such in their much-expanded form. Intermediate training is given at Pensacola, similarly expanded, and at a completely new air center, Corpus Christi, Texas. Operational training — corresponding to advanced Army training — is conducted at Jacksonville and a string of a dozen fields down the Florida coast to Miami, with individual fields specializing in different types of training. Before the war, the naval aviation cadet received training on virtually every type of plane flown by the Navy, from fighters to patrol bombers. This policy has had to be scrapped in favor of specialization at an early stage of the cadet's career, in the interest of saving time. Nevertheless, the naval pilot puts in as many hours before he receives his wings as ever. Before he goes to a unit, he receives additional training, first with members of his squadron (at Atlantic City, N. J.) and then with his group (at Quonsett Point, R. I.). So when the carrier he is to serve on, which meanwhile has been nearing completion, is finally ready, the naval pilot is ready, too, with no significant diminution of his traditional standard of skill.

U. S. NAVY





ESCORT TYPE

U. S. AIRCRAFT CARRIERS

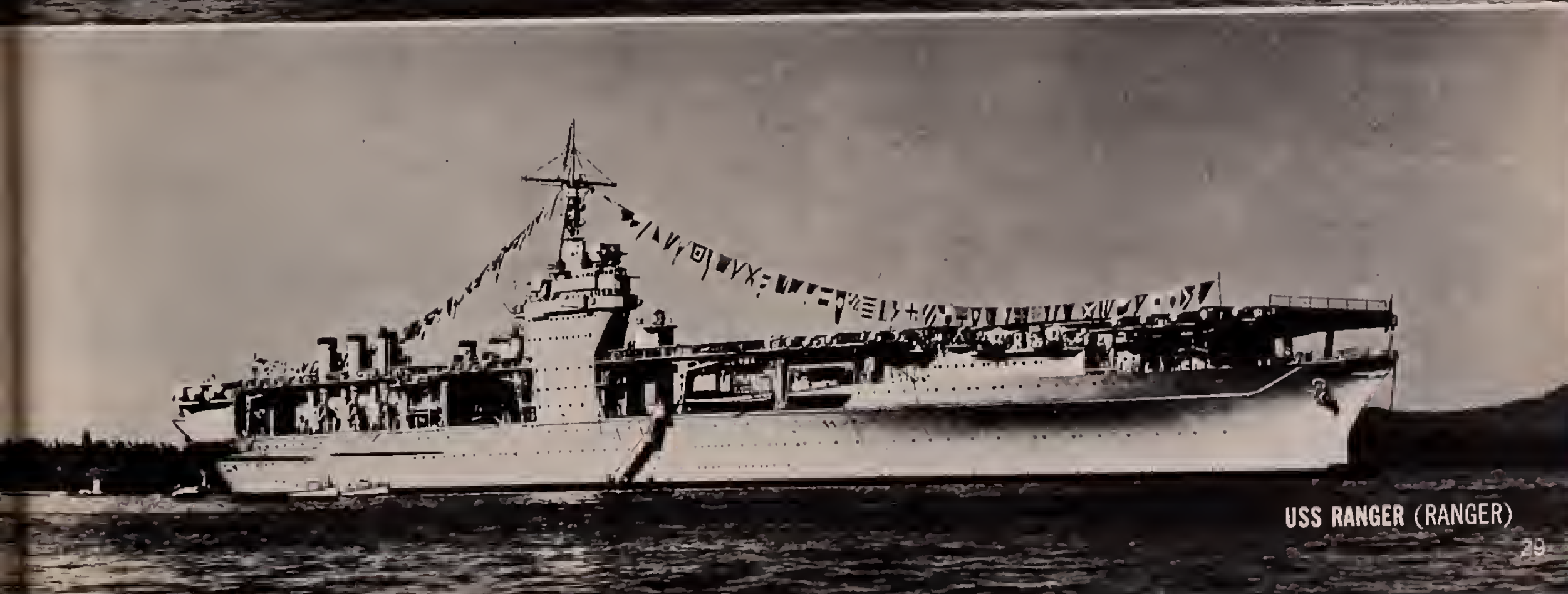


USS SARATOGA (SARATOGA)





USS RANGER (RANGER)



USS RANGER (RANGER)



USS WOLVERINE (WOLVERINE)



USS COPAHUE (COPAHUE)



USS AMEER (ALAZAN BAY)



USS ESSEX (ESSEX)



U. S. NAVAL AIRCRAFT



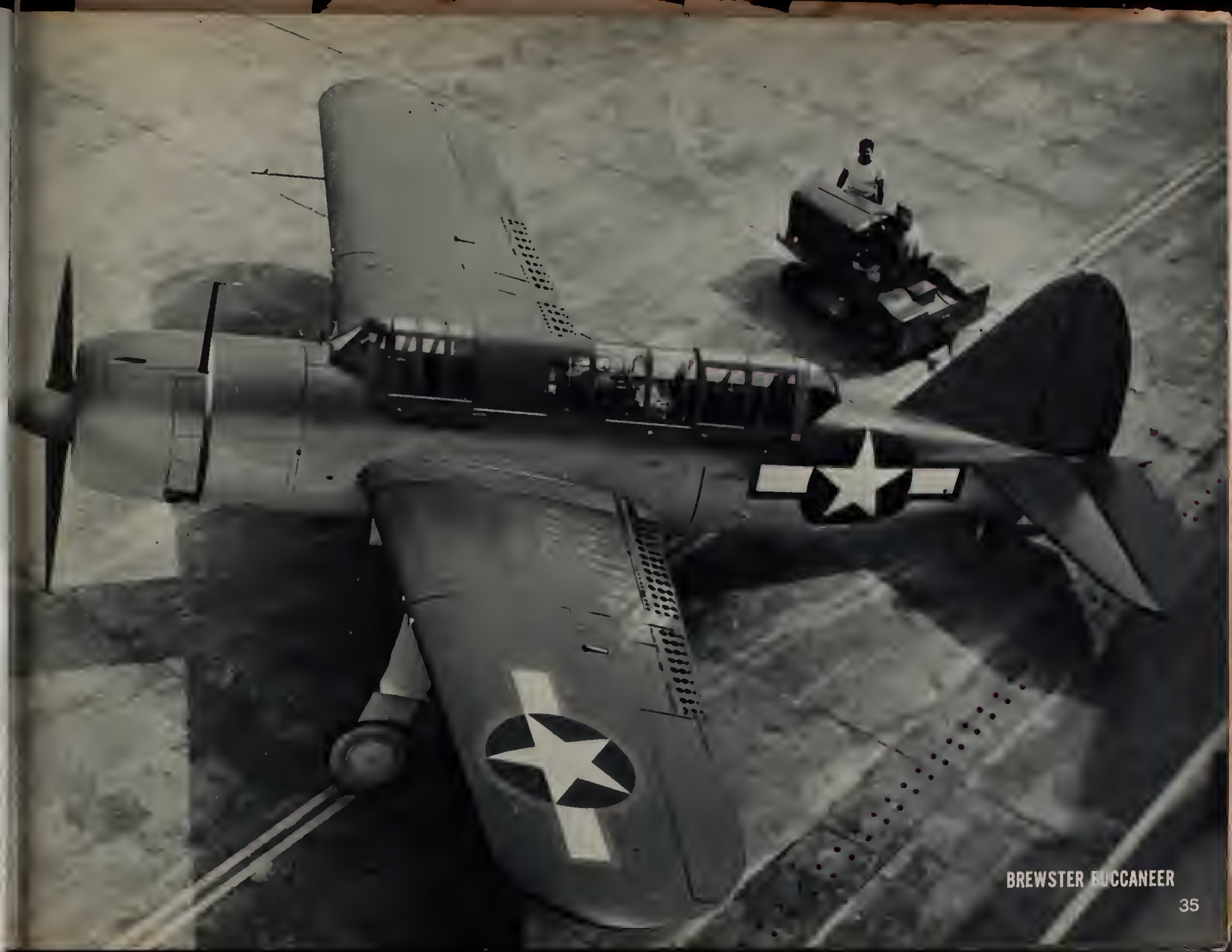
VOUGHT CORSAIR



GRUMMAN WILDCATS



GRUMMAN HELLCATS



BREWSTER BUCCANEER



DOUGLAS DAUNTLESS



CURTISS HELLDIVER



DOUGLAS HAVOC



LOCKHEED VENTURA



GRUMMAN AVENGER



GRUMMAN AVENGER




GRUMMAN AVENGER



CURTISS SEAGULL (SO3C)



VOUGHT KINGFISHER



CURTISS SEAGULL (SOC-2)



VOUGHT KINGFISHER



CONSOLIDATED VULTEE CORONADO



MARTIN MARINER



DOUGLAS SKYTRAIN



NORTH AMERICAN TEXAN



CONSOLIDATED VULTEE CATALINA



BEECHCRAFT UTILITY JRB-1



GOODYEAR M-1



GOODYEAR L-1



GOODYEAR "K" SHIP

U. S. BATTLESHIPS



SOUTH DAKOTA CLASS

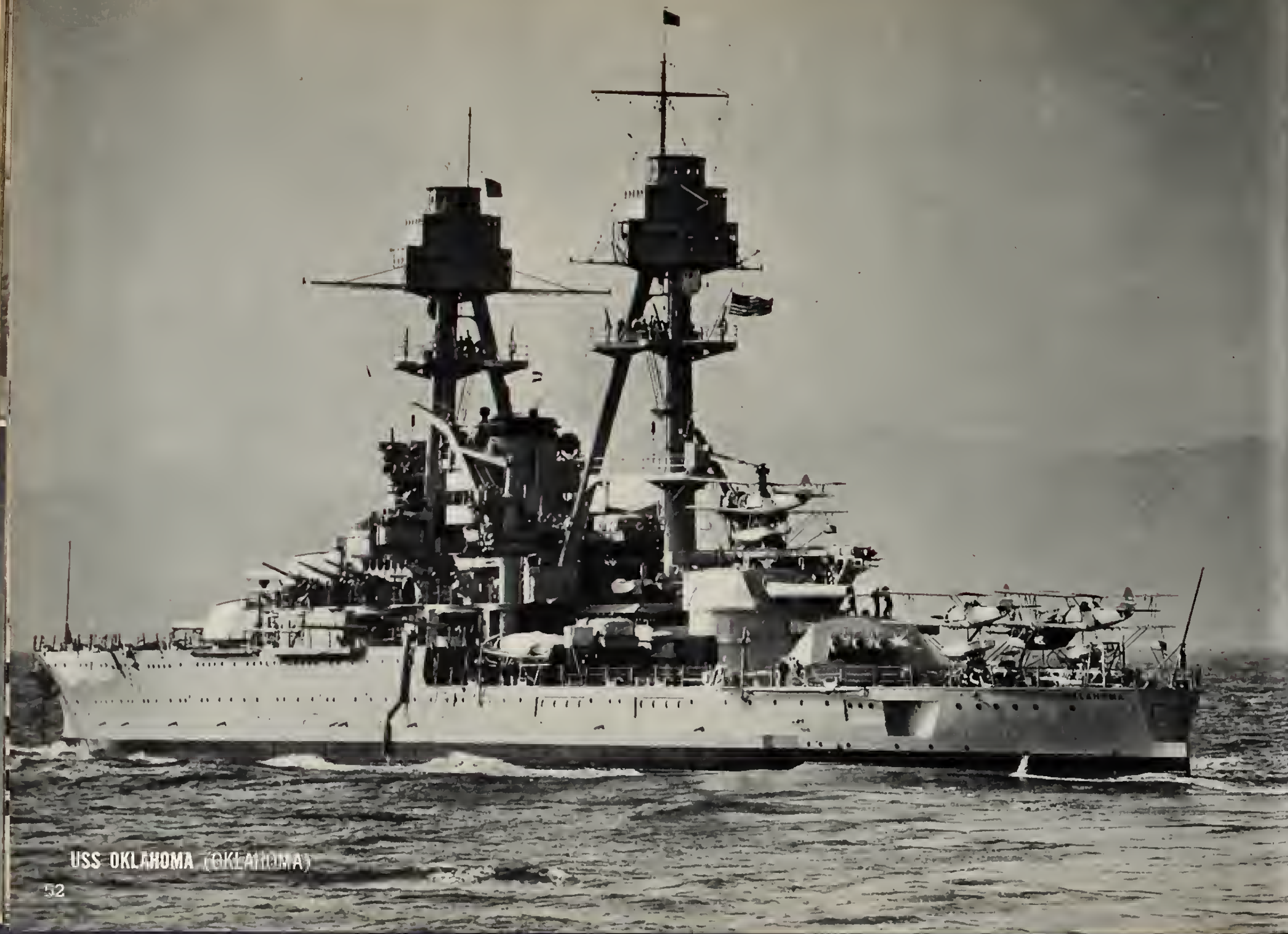


USS TEXAS (TEXAS)





TEXAS)



USS OKLAHOMA (OKLAHOMA)



USS ARKANSAS (ARKANSAS)



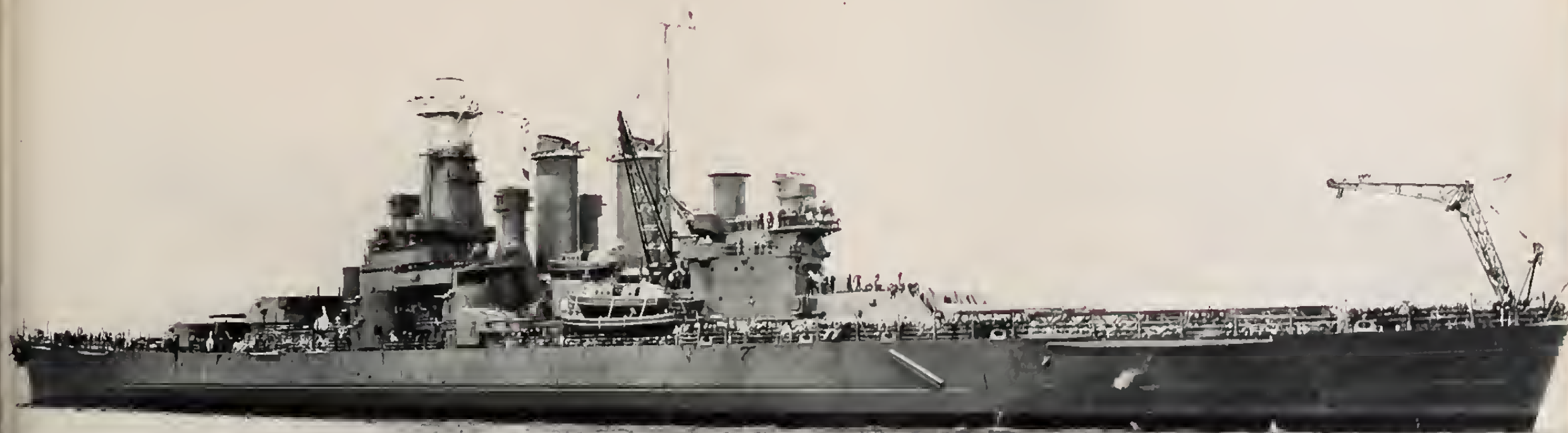
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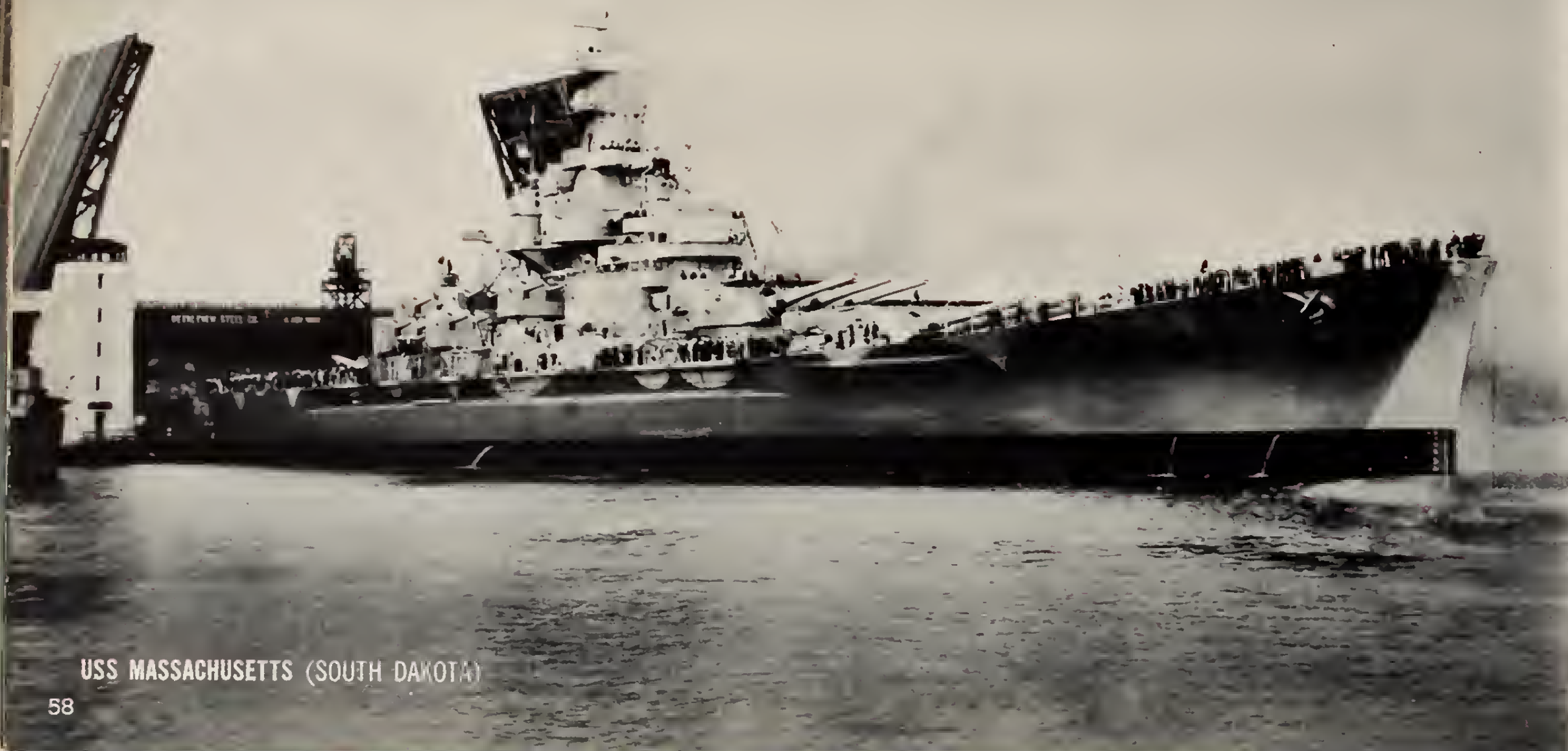


USS IDAHO (NEW MEXICO)



USS MISSISSIPPI (NEW MEXICO)

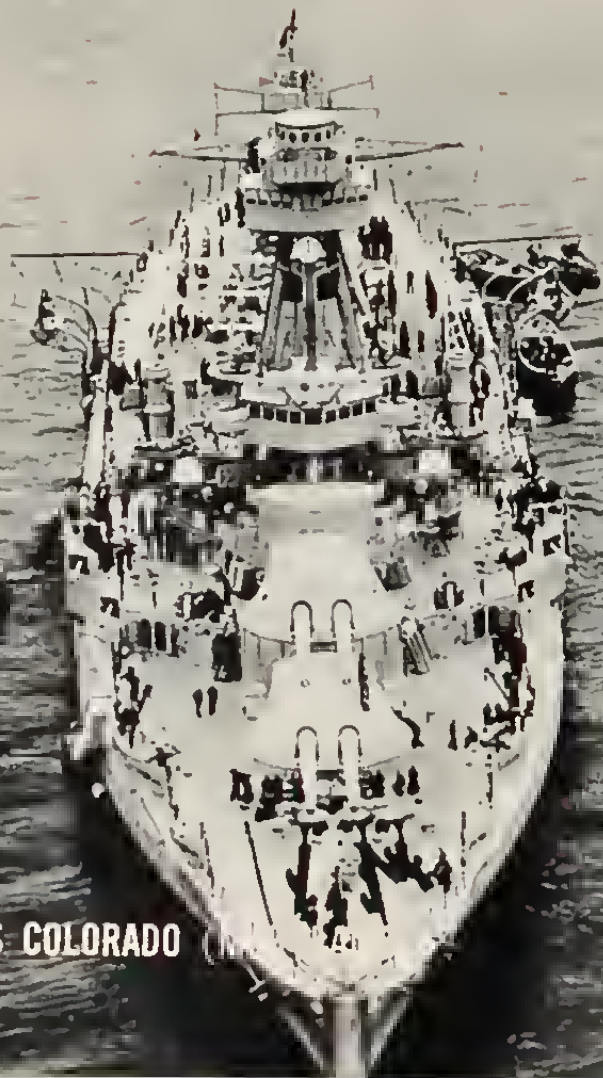




USS MASSACHUSETTS (SOUTH DAKOTA)



USS NORTH CAROLINA (NORTH CAROLINA)



USS COLORADO



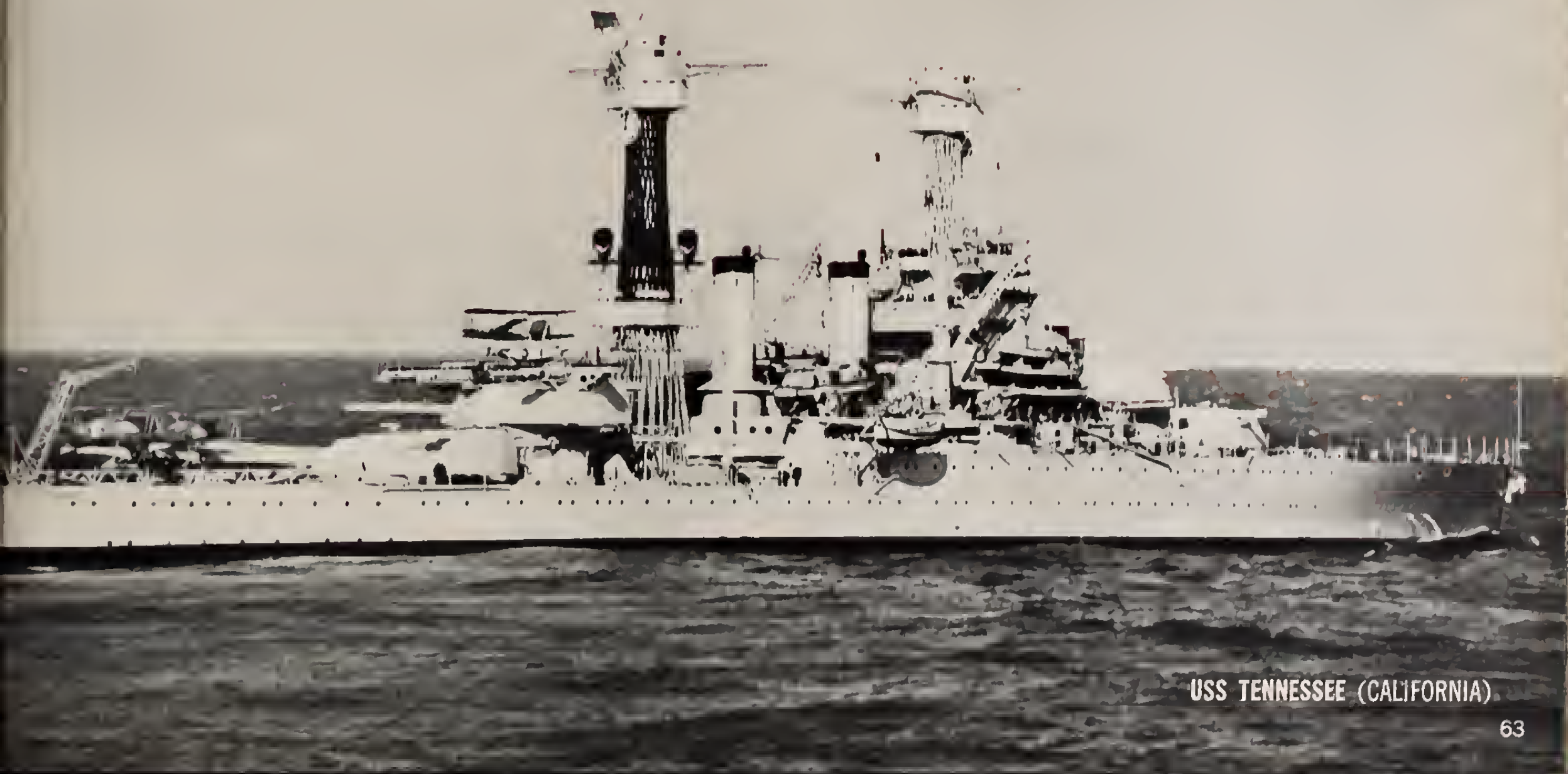
USS NORTH CAROLINA (MICHIGAN)



USS COLORADO (MARYLAND)



USS NEW MEXICO (NEW MEXICO)



USS TENNESSEE (CALIFORNIA)



USS WEST VIRGINIA (MARYLAND)

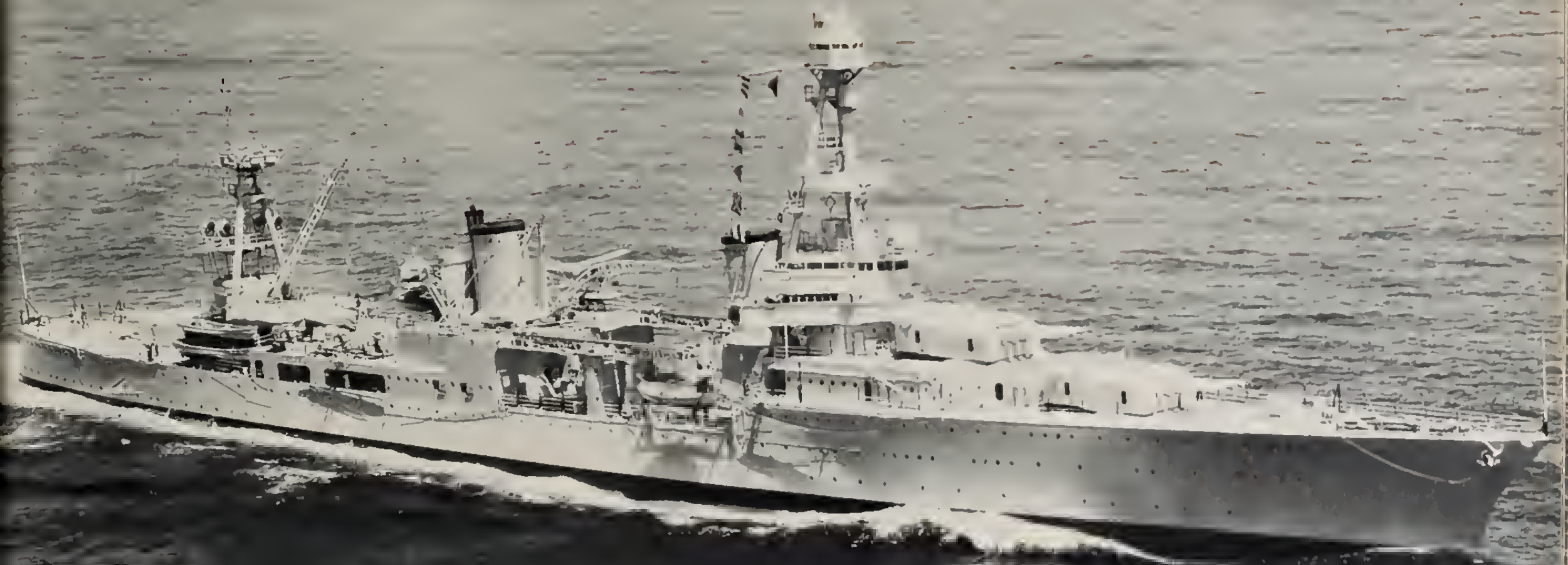
U. S. CRUISERS



USS TUSCALOOSA (MINNEAPOLIS)



USS INDIANAPOLIS (INDIANAPOLIS)



USS CHESTER (NORTHAMPTON)



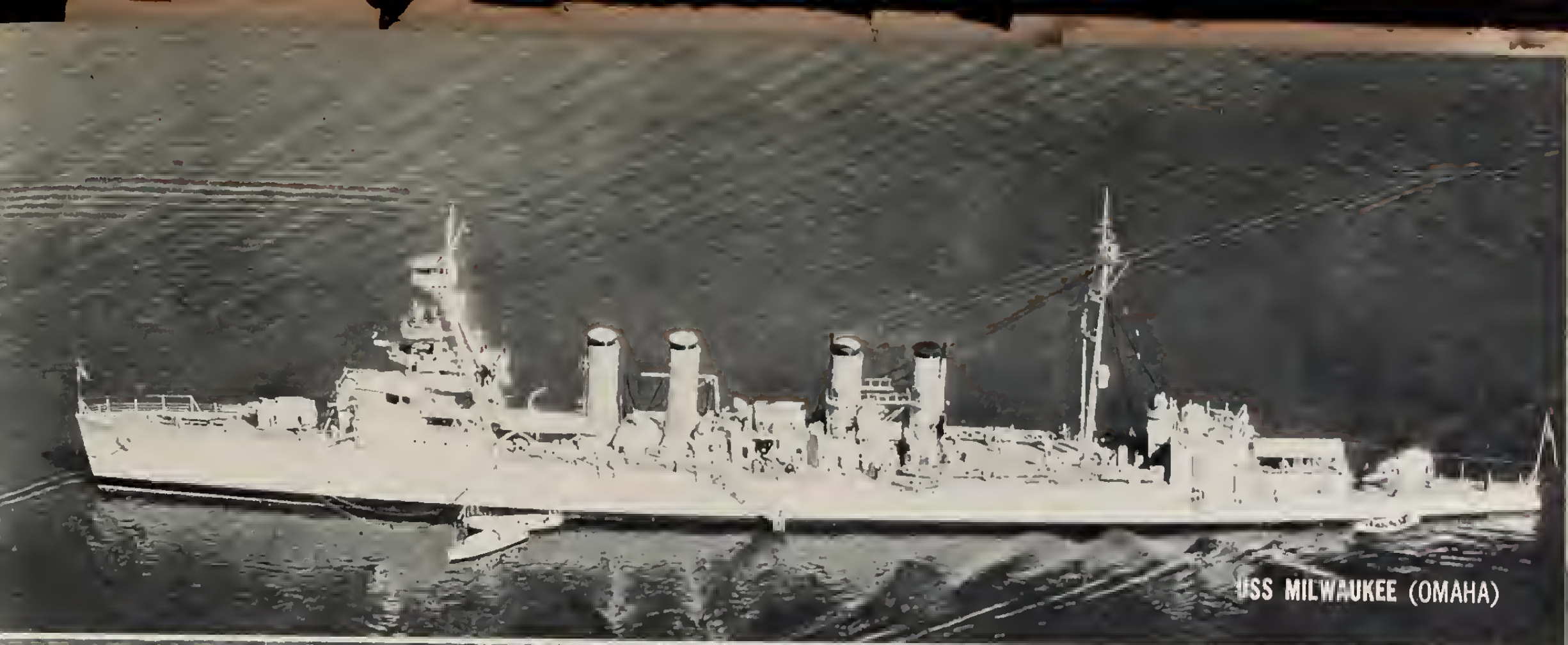
USS MINNEAPOLIS (MINNEAPOLIS)



USS PENSACOLA (PENSACOLA)



USS BALTIMORE (BALTIMORE)



USS MILWAUKEE (OMAHA)



USS WICHITA (WICHITA)



USS SAN DIEGO (ATLANTA)





USS PHILADELPHIA (BROOKLYN)



USS MARBLEHEAD (OMAHA)

U. S. DESTROYERS



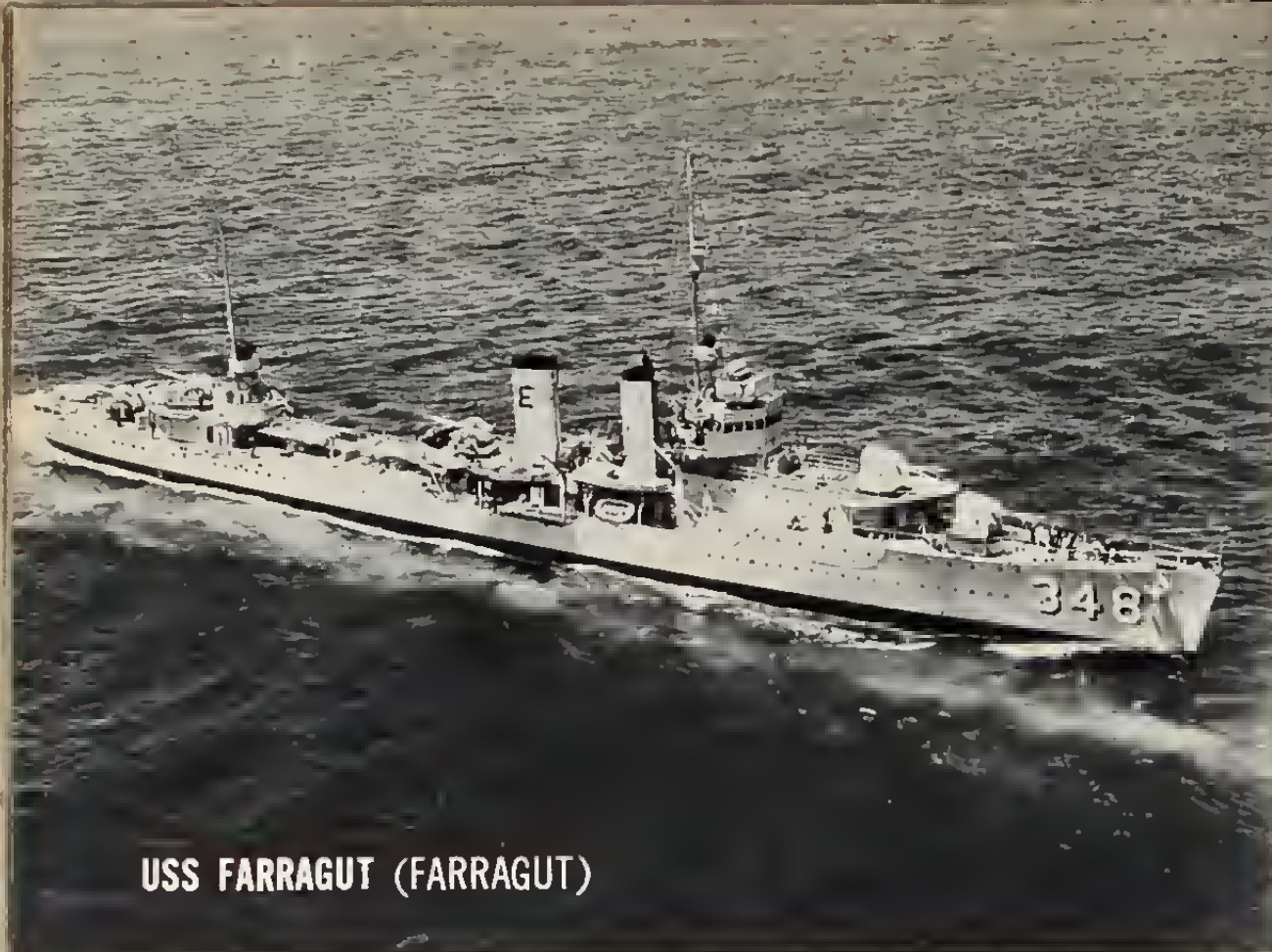
USS BAGLEY (GRIDLEY)



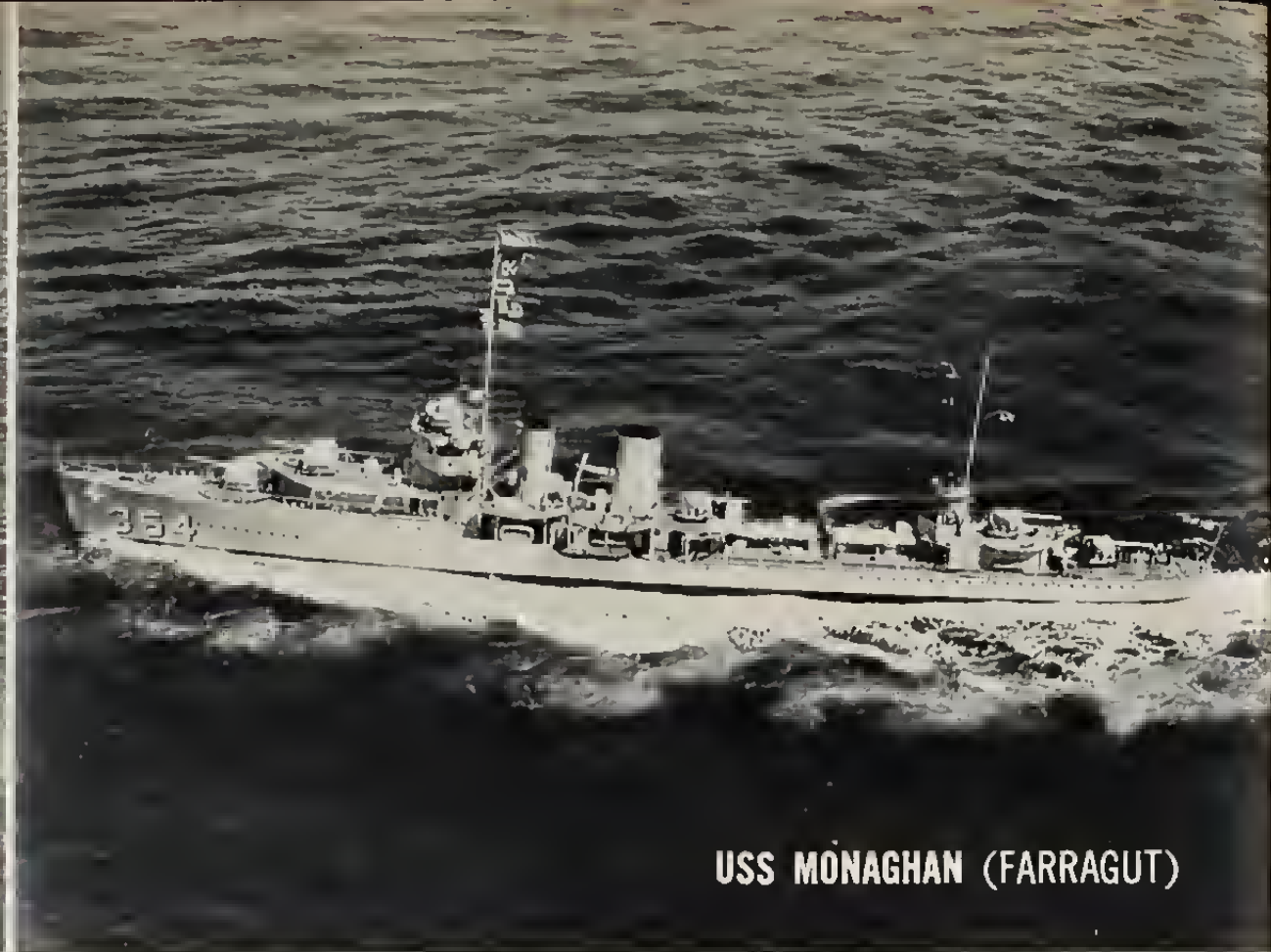
USS HAMBLETON (LST-1156)



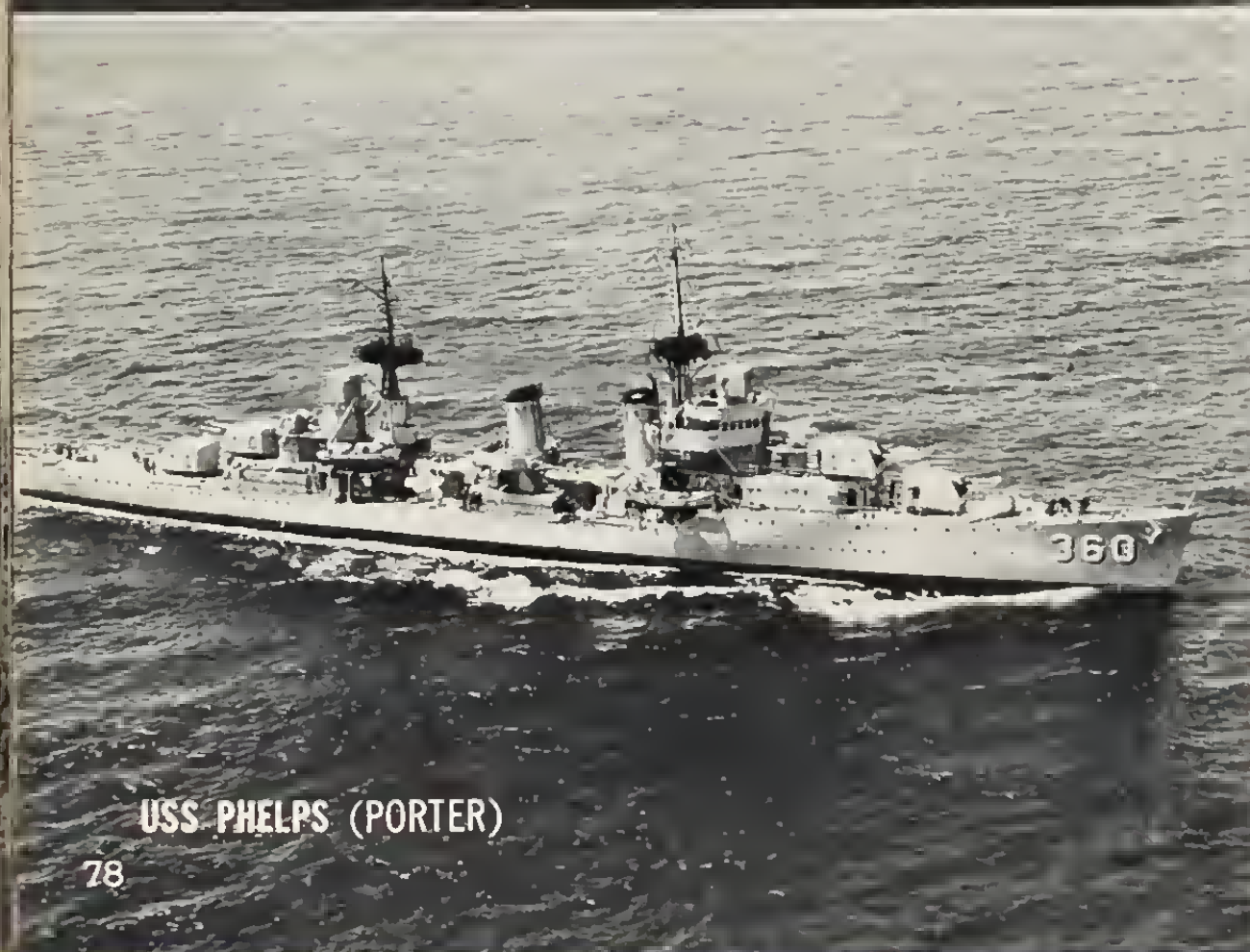
USS SOMERS (SOMERS)



USS FARRAGUT (FARRAGUT)



USS MONAGHAN (FARRAGUT)



USS PHELPS (PORTER)



USS PATTERSON (DONALD)



USS ANDERSON (Sims)



USS ELLYSON (ELLYSON)

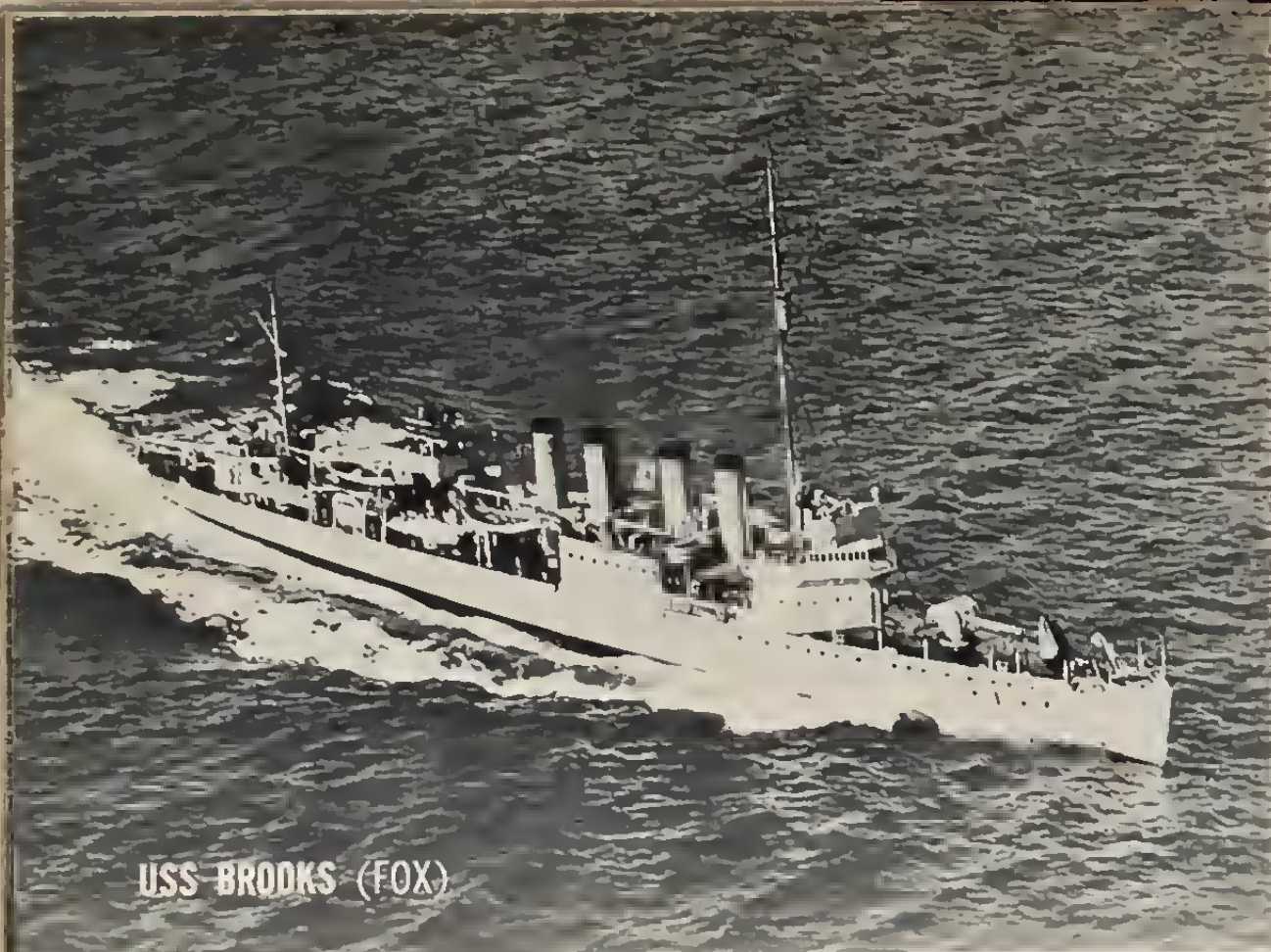


USS NICHOLAS (FLETCHER)



USS KEARNY (BENSON)





USS BROOKS (FOX)



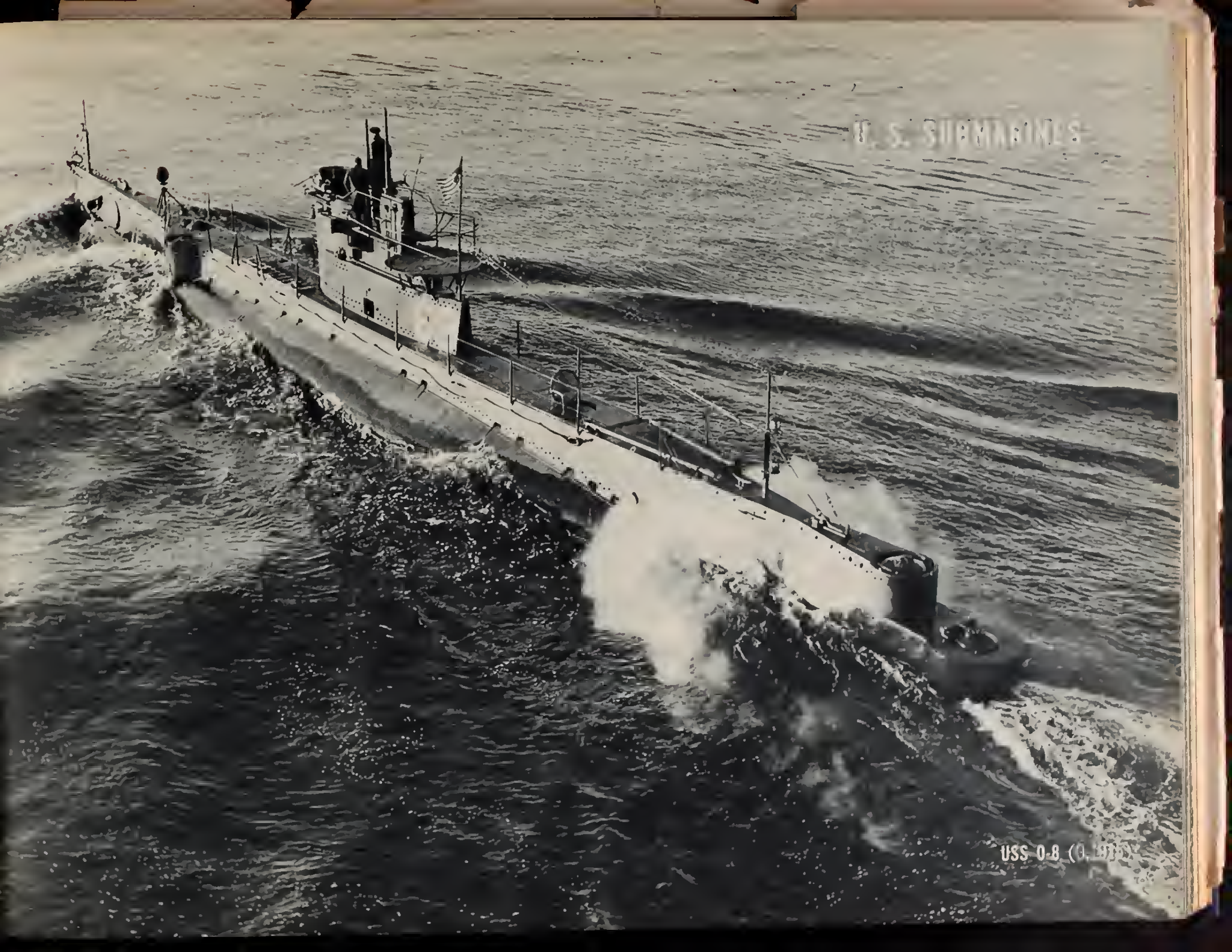
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USS LANSDOWNE (ELLYSON)

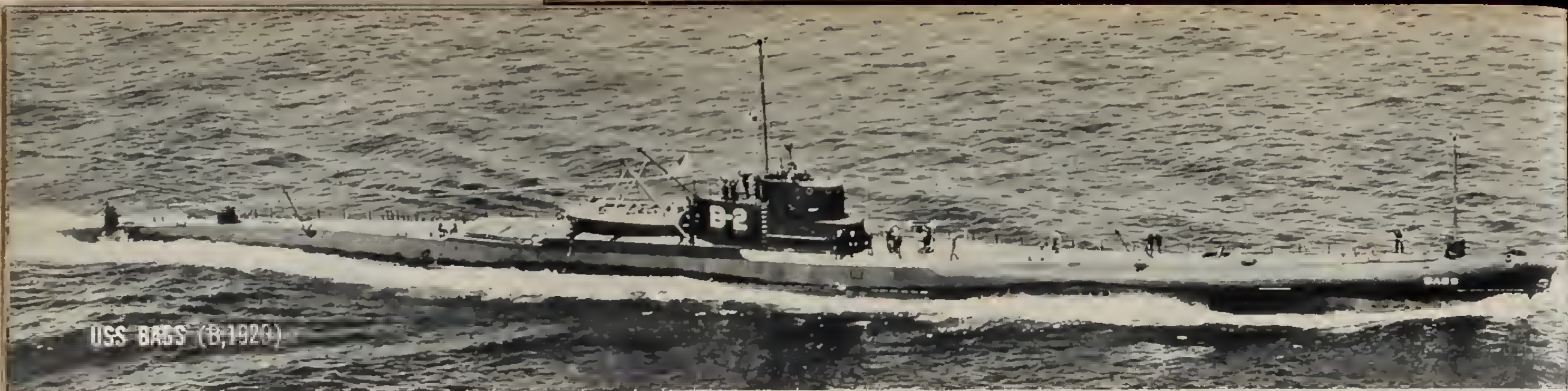


USS TRIPP (GRADLEY)



U. S. SUBMARINES

USS O-8 (1918)



USS BAGS (B,1928)



USS SALMON (S,1935)

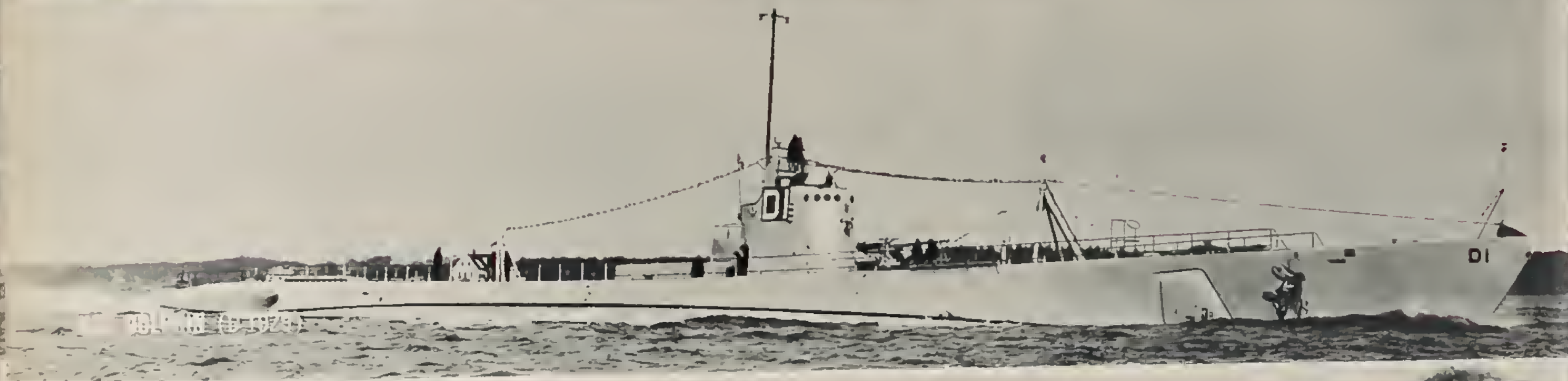


USS SAILFISH (S,1936-37)





USS STINGRAY (S,1935)



USS DOLPHIN (S,1973)



USS S-11 (S,1916-18)



USS O-3 (O, 1915)



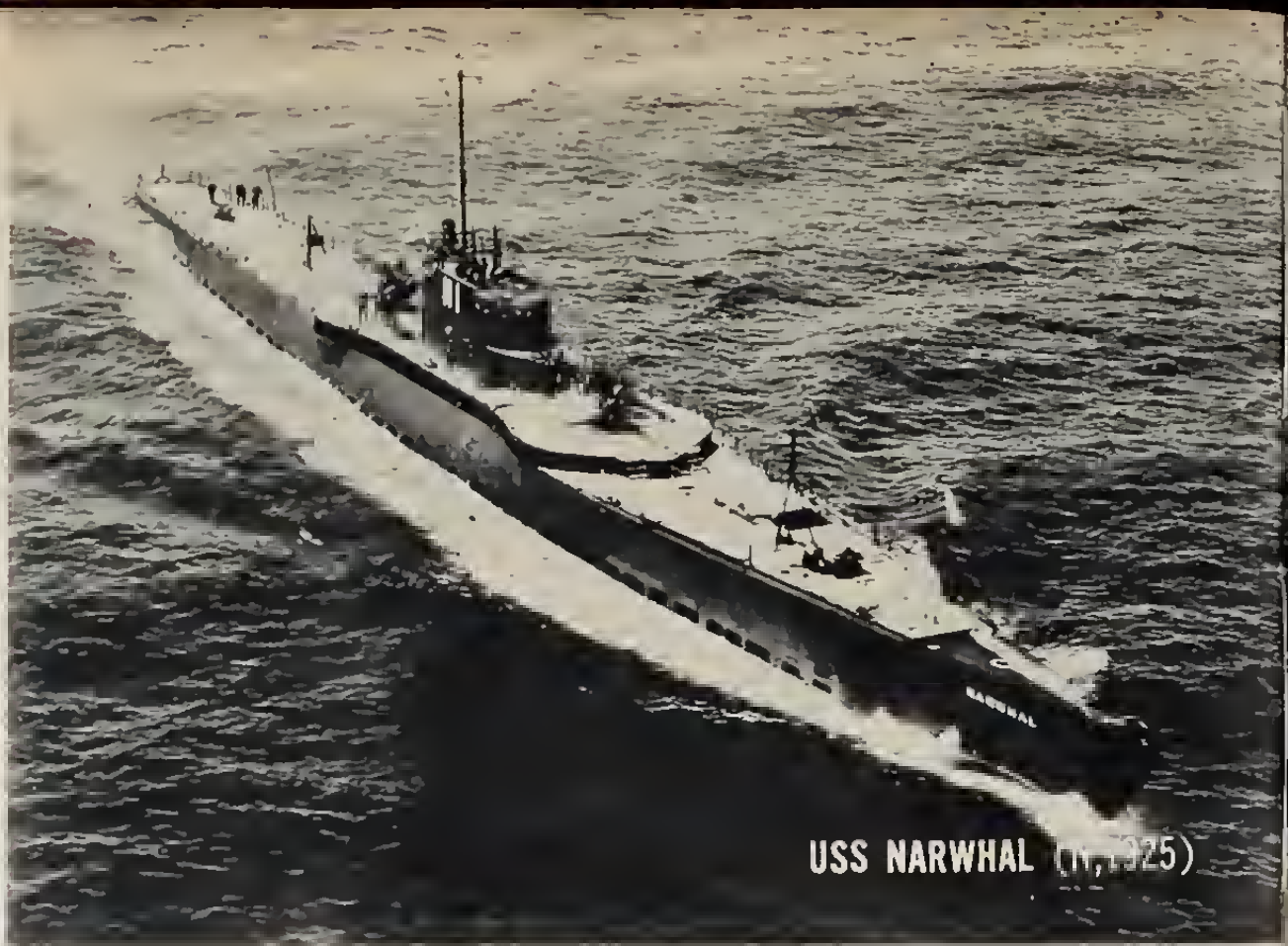
USS MACKEREL (M, 1939)



USS PIKE (P, 1933-34)



USS R-13 (R 1916)



USS NARWHAL (N-1325)



USS DRUM (SS-228) 1940s

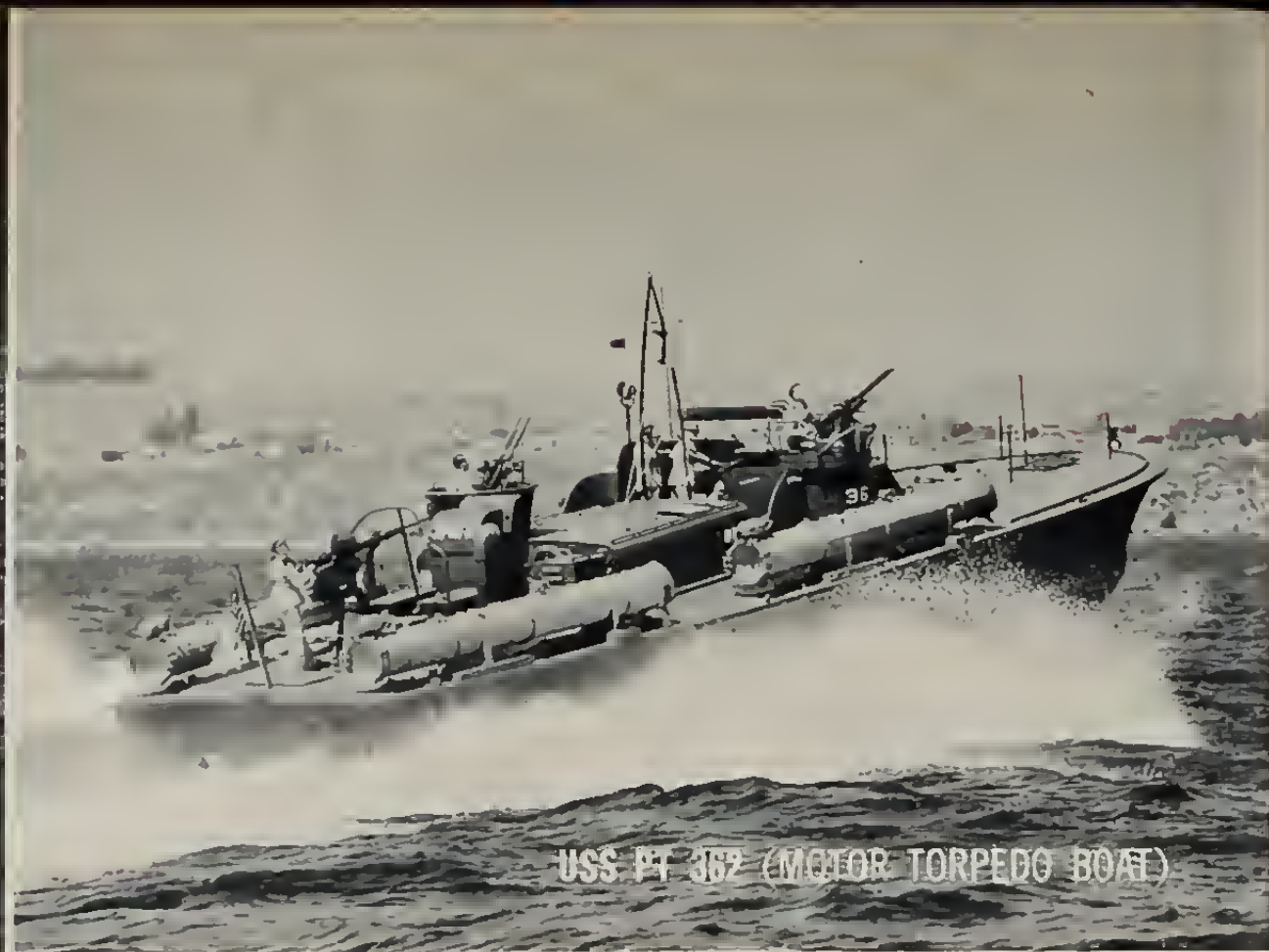
U. S. AUXILIARIES
AND SPECIAL TYPES



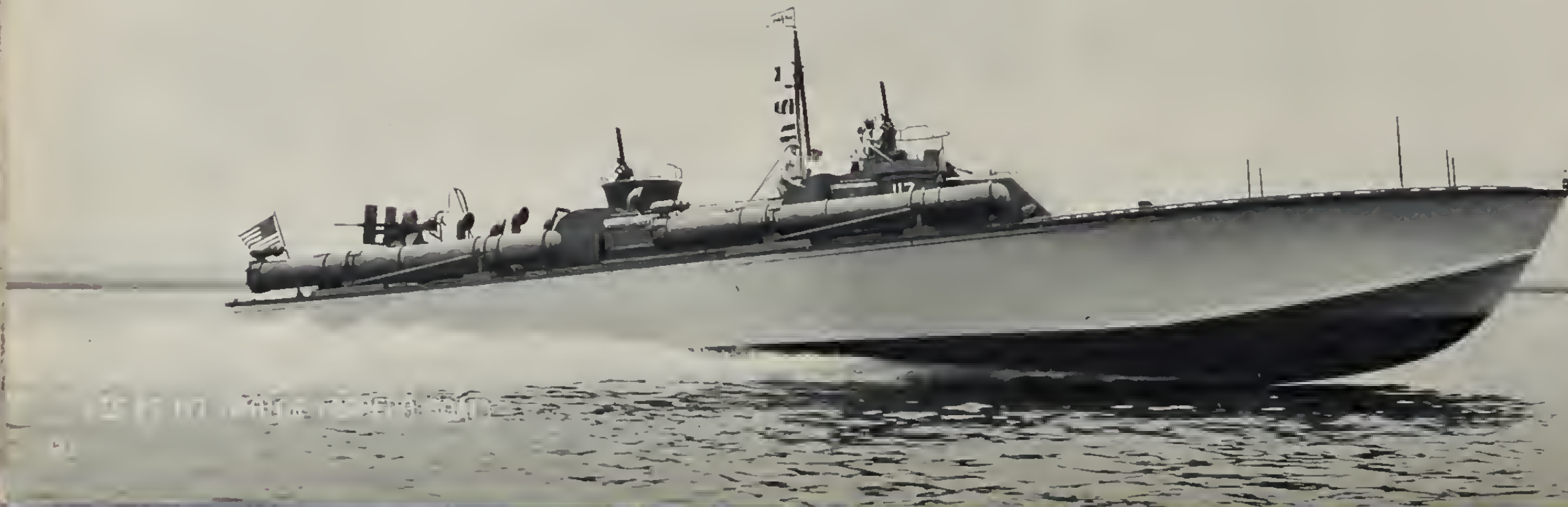
USS PT 17 (MOTOR TORPEDO BOAT)



USS PT 362 (MOTOR TORPEDO BOAT)



USS PT 362 (MOTOR TORPEDO BOAT)



USS PT 362 (MOTOR TORPEDO BOAT)



USS PT 9 (MOTOR TORPEDO BOAT)



USS PT 10 (MOTOR TORPEDO BOAT)



USS PT 6 (MOTOR TORPEDO BOAT)



USS PC 449 (SUBMARINE CHASER)



USS SC 131 (SUBMARINE)



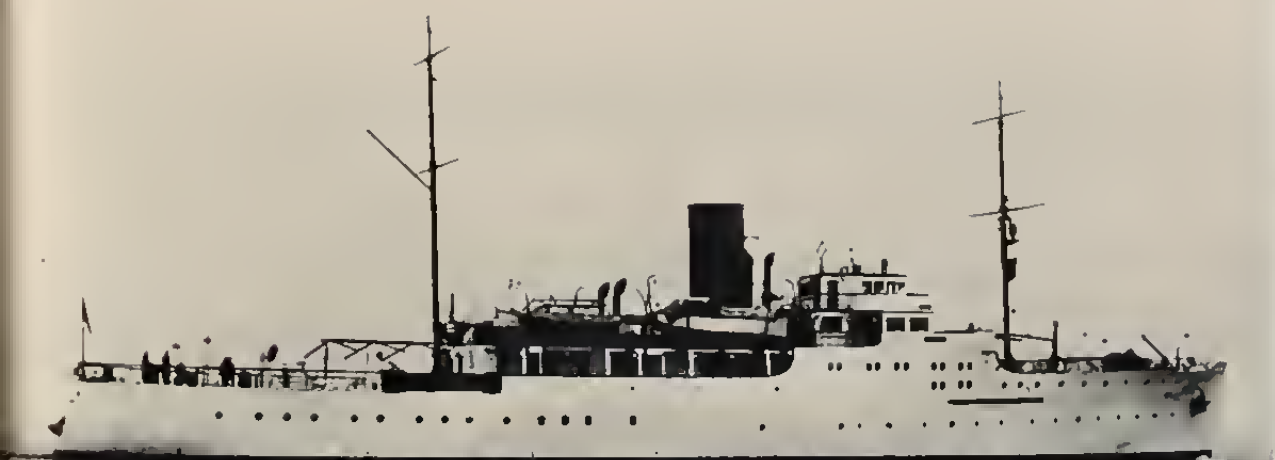
USS PC 453 (SUBMARINE CHASER)



USS PE (T-ESB) (SUBMARINE CHASER)



USS ERIE (GUNBOAT)



USS PLYMOUTH (GUNBOAT)



USS FURY (PATROL GUNBOAT)



USS PREBLE (MINELAYER)

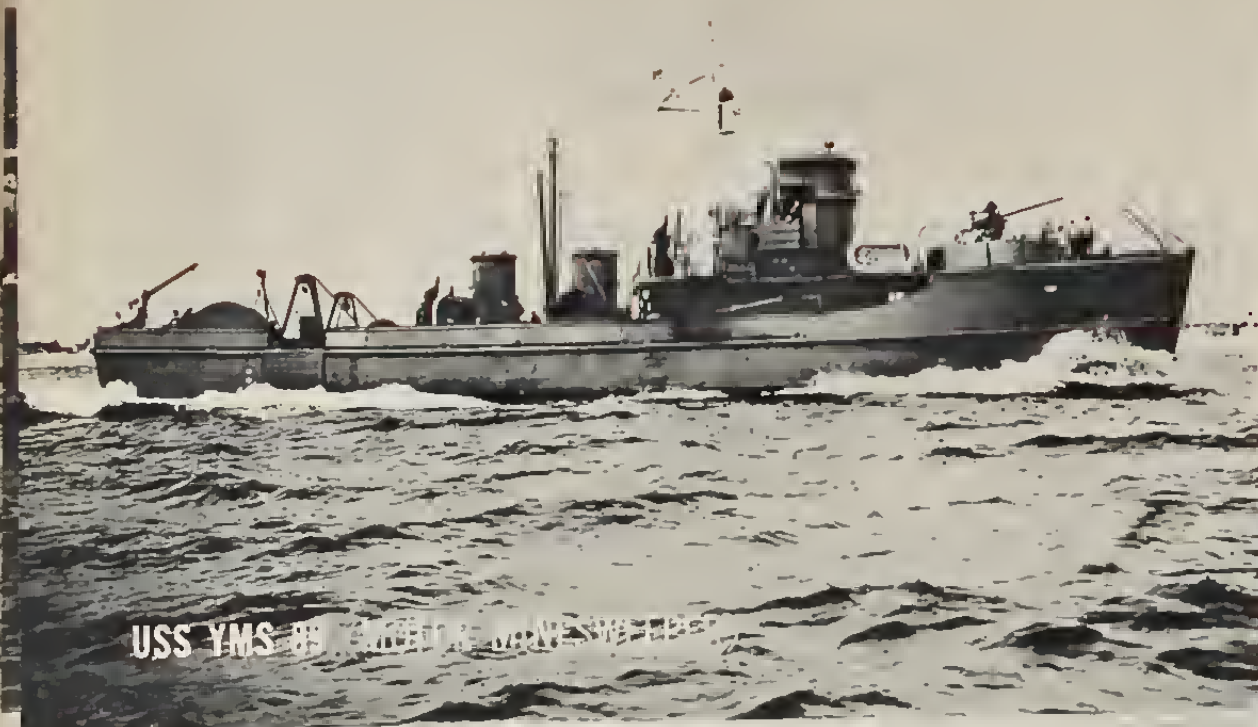


USS SHEPARD (MINELAYER)



USS RAMSAY (MINELAYER)





USS YMS 18 (MINESWEEPER)



USS RAVEN (MINESWEEPER)



USS YMS 20 (MINESWEEPER)



USS PYRO (AMMUNITION SHIP)



USS PATOKA (OILER)



USS RELIEF (HOSPITAL SHIP)



USS KASKASKIA (OILER)



USS SOLACE (HOSPITAL SHIP)



USS MACKINAC (SEAPLANE TENDER)



USS TANGIER (SEAPLANE TENDER)



USS POCOMOKE (SEAPLANE TENDER)



USS GEORGE E. BADGER (SEAPLANE TENDER)



USS DIXIE (DESTROYER TENDER)



USS PETIAS (SUBMARINE TENDER)



USS MEDUSA (REPAIR SHIP)



USS CURTISS (SEAPLANE TENDER)



USS ARCTIC (STORESHIP)



USS ALBATROSS (REPLENISHMENT SHIP)



USS CHEROKEE (TUG)



USS VULCAN (REPAIR SHIP)



USS WEST POINT (TRANSPORT)



TRANSPORT



TRANSPORT



USS AQUIDNECK (FERRYBOAT & LAUNCH)



USS AMETHYST (HARBOR YACHT)



USS YP 94 (HARBOR VESSEL)



USS YP 84 (HARBOR VESSEL)



LANDING CRAFT, INFANTRY



LANDING CRAFT, TANKS



LANDING CRAFT, INFANTRY



GREAT BRITAIN

THE HISTORY of Great Britain is written upon the sea, and in that history, the "king's ships" have taken a leading part for more than a thousand years. It was the "sure shield" of the Navy that first made Britain great, enabling her to funnel her energies into commerce and industry, while her European neighbors were wasted by each other's ravaging armies. The Empire itself is a creation of British sea power. The first "king's ships" were a flotilla of 60-oar galleys built by Alfred the Great to defeat Viking invaders in the year 878. The "king's ships" have formed the nucleus of every British fleet since, although a system of ship contributions by shires or counties, cities and some feudal nobles, on which England had depended previously without success, remained in force for several hundred years. The "king's ships" have failed to prevent an enemy from gaining a foothold in Britain only once — in 1066, when William the Conqueror crossed the Channel while the English were in the north putting down a revolt by Tostig, brother of ill-fated King Harold.

Owing to William's possession of extensive French lands, English fighting ships were constantly engaged during the reigns of the Norman, Plantagenet and Lancastrian kings. In 1213, King John — villain of the Lion-hearted Richard tales and the tyrant who was compelled to sign the Magna Carta — destroyed a French fleet at Damme in Flanders and won command of the Channel and French Atlantic coast. In 1340, Edward III annihilated an even greater French force at Sluys to open the titanic Hundred Years' War. Under a later monarch, Richard II, the English grip relaxed and the French ravaged the southern English coast, but Henry V (1413-22) built up the king's fleet once more. In this period, however, England still ranked behind Portugal, Spain and the Italian city-states as a maritime power.

At the close of the Hundred Years' War, which gave birth to Joan of Arc and cost England all her territories in France except the port of Calais, a bitter civil war broke out between rival claimants to the English throne. The War of the Roses (1461-85) resulted in the mutual extermination of most of the feudal English nobility, whose incessant plotting and fighting had been a millstone to England for centuries, and brought to the throne Henry of Tudor. Henry, who ruled as Henry VII, and his son, Henry VIII, laid the foundations on which the admirals and captains of his granddaughter Elizabeth raised England to first place upon the sea. Henry VII rigorously promoted sea-going commerce and built a large fleet of heavily-armed merchantman-fighting ships. Henry VIII built *Mary Rose*, the first British line-of-battle ship, and *Henri Grace à Dieu*, the mightiest vessel of her age. In 1546 he established the first central administration of the fleet by setting up an admiralty board and creating the post of Lord High Admiral.

Before Good Queen Bess came to the throne in 1558, a couple of briefly-reigning incompetents nearly spoiled the work of the two Henrys. Elizabeth, however, quickly picked up the pieces. As a leading Protestant power, England

was constantly at war or on the verge of war with Catholic Spain. Elizabeth took advantage of the situation by sending out an endless stream of privateers who made themselves, Elizabeth and England rich by looting the Spanish Main. This buccaneering and other circumstances induced Philip II of Spain to invade England in 1586. To this end he began assembly of the "Invincible Armada." But the next year one of Elizabeth's privateer-heroes, Sir Francis Drake, raided the Armada's base, Cadiz, and destroyed half of it. Drake had only four vessels, but they were magnificently sailed and of a revolutionary design — long, narrow and handy, with broadsides of the heaviest cannon — devised by another Elizabethan sea dog, John Hawkins. In 1588, when the Armada finally sailed, more like them and more heroes of Drake's and Hawkins' cut — Frobisher, Seymour and others — crushed it. A gale completed the Armada's rout as it retreated around Scotland, less than a third of the original 130 ships escaping destruction. Two years later, another raid on Cadiz finished the threat of Spanish sea power.

After Elizabeth's death, Britain's newly-won trident slipped from the hands of the first Stuart kings. During the civil war between royalists and Cromwellians, it was seized by the Dutch, with the aid of remnants of the navy, which was royalist and deserted to Holland when Charles II was beheaded. Puritan England, however, quickly found a man to re-assert British naval primacy. He was Robert Blake who, though he had had no previous naval experience, not only rebuilt the British fleet but beat off the challenge of two of history's greatest sea fighters, Tromp and de Ruyter, in the twelve desperate battles of the Dutch War of 1652-54. In two later wars, the British did not do so well, but the Dutch victories were Pyrrhic, for Holland was bled so white that even before the British and Dutch crowns were united by the ascent of William and Mary to the British throne in 1689, she was no longer a threat to British naval suzerainty.

The greatest period in British naval history is the century and a quarter from 1689 to 1815, during which the English, fighting almost uninterruptedly, first with the Bourbons, then with the Revolutionists and Napoleon, conquered virtually the entire French overseas empire and broke France's bid for hegemony in Europe. The first of this series of struggles was the War of the League of Augsburg (1689-97), in which combined Anglo-Dutch fleets overwhelmed the French at Barfleur and La Hogue. The second was the War of the Spanish Succession (1701-13), fought as Queen Anne's War in America. In it Admiral Rooke crushed a Franco-Spanish fleet at Vigo in 1702, and in 1704 defeated the French Mediterranean squadron near Malaga and seized Gibraltar. Equally bold commanders — Benbow, Leake, Martin and Shovell — terrorized France overseas and drove the French flag from the seas. The first five years of the third war, the War of the Austrian Succession (1739-48), produced a series of British disasters, the fleet having been permitted to go to seed since 1713. In 1744, however, command of the fleet was assumed by Admiral Anson.

another of those great seamen the British invariably seem to find in moments of crisis, and in 1747 he and Hawke destroyed the French fleet in two battles off Cape Finisterre, the northwest corner of Spain. The fourth struggle, the Seven Years War (1756-63), the French and Indian War in America, which likewise began with a succession of defeats, yielded some of England's greatest triumphs. In 1759, Hawke and Boscawen frustrated an attempt to invade England by defeating the fleets intended for the armada in battles off Portugal and at Quiberon Bay; Saunders took Gen. Wolfe up the St. Lawrence to capture Quebec; and French squadrons were driven from both the East and West Indies. The Treaty of Paris (1763) confirmed France's consequent loss of Canada and India. The fifth and last war against the Bourbons grew out of our Revolution. After 1763, France rebuilt her fleet and in 1778 declared war against her ancient enemy in support of the American colonists. As usual, the British began badly, but by 1780, the outlying French squadrons had been dispersed or driven in, and in 1782 the main French fleet under de Grasse was crushed by Lord Rodney in the Battle of the Saints, off Guadeloupe in the West Indies. Though the war cost Britain the American colonies, French naval power had been struck another crippling blow.

The overthrow of the Bourbon monarchy by French revolutionists set off a new series of wars between France and an English-led coalition built around British gold and the British fleet. In the first of them, the French Revolutionary Wars, a new French fleet was defeated by Lord Howe (brother of the Gen. Howe who fought Washington) in the Battle of the First of June (1794) 400 miles west of France. In 1797, the traditionally harsh treatment of British navy enlisted men or ratings provoked the famous mutiny at the Nore. Nevertheless, later that year the British defeated a Dutch squadron at Camperdown. (The Dutch monarchy had been overthrown by a French-inspired Batavian Republic, which had become an ally of France). In 1797, the British, under Sir John Jervis, also overwhelmed a French-allied Spanish fleet off Cape St. Vincent.

Although the coalition and France now signed the peace of Campo Formio, the next year a 29-year-old general who had become the foremost soldier of Europe set out to seize Egypt and the Near East and thus cut British communications with India. His efforts were frustrated by the future Lord Nelson, who was destined to become history's foremost sea fighter. Nelson annihilated Napoleon's supporting fleet in Aboukir Bay at the mouth of the Nile, forcing him to abandon the entire campaign.

When Napoleon returned to France, and embarked upon his career of personal conquest, he found all Europe in arms against him. One of his first moves was to win Russia and the Scandinavian powers away from the British coalition. By skillful diplomacy, he induced them to adopt a position of armed neutrality, which was actually quite unfriendly to England. In 1801, Nelson with Admiral Parker, broke into Copenhagen harbor and wiped out the northern powers' principal naval arm, the Danish fleet. Napoleon's next plan, preparations for which were set under way when Britain broke a brief peace, was the invasion of England. This was also foiled by Nelson. For two years, while Bonaparte gathered troops, horses and munitions along the Channel coast, superior

British squadrons watched every port in which there were French warships that might serve as convoys. At last 18 of the French under Villeneuve succeeded in escaping Toulon, where Nelson was on watch, under cover of a gale and headed toward the West Indies, hoping to draw the British off so that the remaining French warships could assemble and clear the way across the Channel for the Grand Army. Nelson gave chase with a small force and Villeneuve, seeing that the British thus refused to be drawn off, headed back across the Atlantic, with the intention of outspeeding Nelson and uniting with a powerful fleet at Brest. Villeneuve, however, encountered another British squadron off northern Spain, fought an indecisive engagement and retired to Cadiz. Napoleon soon appeared off the Spanish port with a reinforced fleet of 27 ships. Villeneuve, who now had 15 Spanish as well as his own 18 vessels, received peremptory orders from Napoleon to put to sea, for he was not advancing the Emperor's design by staying in port. So on Oct. 19, 1805, Villeneuve's fleet left the harbor. Two days later, it was met and annihilated ten miles from Cape Trafalgar (near Gibraltar) by Nelson, who brilliantly cut the larger enemy fleet in half and then proceeded to destroy it in detail. Nelson was killed, but Britain had no further need of his genius. Napoleon never challenged the British fleet again and was finally defeated in part by the blockade, in part by armies and supplies the British were free to transport where and as they pleased.

From 1815 to the present, British sea power has been challenged only twice, both times by Germany. The British are now yielding their trident to the United States, by virtue of America's incomparably greater shipbuilding and industrial resources, but Britain and America are allies. In the 15 years before the World War, Germany engaged Britain in a building race, straining her every resource but for every ship she built, Britain launched two. Thus, when the British surface fleet was put to the test, at Jutland, the result was a foregone conclusion. Britain could afford the 14 ships she lost much more easily than Germany could afford her 11 casualties.

Under a law dating back to 1709, the Royal Navy (legally the king's personal property) is managed by a board of admiralty whose official title is the Board of Commissioners for Executing the Office of Lord High Admiral of the United Kingdom. At the head of the board is the First Lord (currently A. V. Alexander), a civilian who as a member of the cabinet corresponds to the U. S. Secretary of Navy. The actual commander is the First Sea Lord and Chief of the Naval Staff (now Admiral of the Fleet Sir Andrew Cunningham). Other members are the Deputy First Sea Lord (Admiral Sir Charles Kennedy-Purvis); the Second Sea Lord (Vice-Admiral Sir William Whitworth), in charge of personnel; the Third Sea Lord and Controller (Vice-Admiral Sir William Wake-Walker); Fourth Sea Lord and Chief of Supplies and Transport (Vice-Admiral Sir John Cunningham); Parliamentary Secretary (Lord Bruntisfield); Financial Secretary (G. H. Hall); and Civil Lord (Capt. R. A. Pilkington). In 1912 two posts were created to permit establishment of a naval general staff, Deputy Chief of Staff (Vice-Admiral Sir Neville Syfret) and Assistant Chief of Staff. Of the latter there are now two (Rear-Admirals J. H. Edelsten and W. R. Patterson). In 1937, a Fifth Sea Lord, who is Chief of Naval Air Equipment (currently Rear-

Admiral D. W. Boyd), was also added. More recently, the post of Controller of Merchant Shipbuilding and Repairs (Sir James Lithgow) has been created. The last member of the board is the Permanent Secretary (Sir Henry Markham), a civil service appointee.

Ordinarily, the Royal Navy is a long-service force, with ratings joining at the age of fifteen and a half, going through two years of schooling and then serving twelve years, and officers entering at thirteen and a half via the Royal Naval College, Dartmouth, where they receive four years of schooling before going to sea as midshipmen. Currently, however, the bulk of enlisted men are conscripts in for the duration only. The long service ratings are also outnumbered by "short service" enlistees (seven years active duty, five years in reserve) recruited in the period just before the war. There are also volunteers in just for the duration. Officer needs at the beginning of the war were met by training and commissioning graduates of Britain's mis-named public schools, which are equivalent to exclusive American private schools. Officers are now, however, chosen entirely from the ranks. Grades in the British navy are generally similar to those in the American, except that ensigns are known as sub-lieutenants.

BRITISH COMMONWEALTHS AND INDIA

In addition to the Royal Navy proper, many of the British commonwealths and colonies maintain naval forces of their own, ranging in size from a few small craft (as the African colony of Kenya) to a force of over 650 ships, as the Canadian. In nearly every important action of the war, in fact, there have been one or more Empire participants.

The largest of the Empire naval forces is the Royal Canadian Navy, commanded by Vice-Admiral Percy Walker Nelles, the first Empire man to fly an admiral's flag in his own territory's service. At the beginning of the war, the Canadian navy had 15 ships, manned by 300 officers and 1,400 ratings. At the beginning of 1944, it counted 250 combat vessels, 400 other craft and 80,000 officers, men and women auxiliaries. In the past, its principal duties have been in

the convoy service — Canada had general responsibility for western Atlantic convoy operations up to U. S. entrance into the war — and its largest vessels have been destroyers, largely British-built. Now, however, Canada is building her own destroyers and this year is to man two British cruisers which, it is reported, will be transferred to the Maple Leaf Dominion in partial settlement of its huge lend-lease advances to Britain. The R. C. N. may also receive two American-built escort carriers, the first carriers to go to a British unit other than the Royal Navy itself.

The second of the Empire naval forces is the Royal Australian Navy. Australian population and resources are not so great as Canadian, and a greater proportional effort has gone into the Australian army; nevertheless, Australia has been able to place on the seas a force seven times as great as in 1939. The Australian fleet, which has been active in the Mediterranean and Atlantic as well as the Pacific, includes four cruisers (one built in Australia). Three others have been lost. One of the latter, the *Sydney*, sank the Italian *Bartolomeo Colleoni* off Crete in 1940. Like the Canadians, Australian officers are now home-trained instead of being sent to England for schooling.

The Royal New Zealand Navy has also grown. Its principal units are still a pair of cruisers, *Achilles* and *Leander*, on loan from the Royal Navy. (*Achilles* took part in the Graf Spee action as a New Zealand ship.) However, *H. M. N. Z. S. Tamaki*, the New Zealand training station, turns out 600 trained recruits annually, and 7,000 New Zealanders are serving in the Royal Navy and another 5,000 are active in home waters or with U. S. forces in the South Pacific.

The Royal Indian Navy, which is still generally officered by British, although the percentage of Indian officers has increased, has likewise expanded. It operates British- and Australian-built corvettes and minesweepers, and trawlers constructed entirely in India — the largest vessels India has attempted to build in quantity in her own yards. *H. M. I. S. Bengal*, a minesweeper, in company with an armed Dutch tanker, *Ondine*, succeeded in hesting two large Japanese merchant cruisers, sinking one and driving off the other, in a battle early in 1942, an accomplishment which has not many equals in the annals of any navy. The largest of the remaining naval services, the South African, operates a division of minesweepers with the Royal Navy.

GREAT BRITAIN - BATTLESHIPS



HMS NELSON (NELSON)



HMS RODNEY (NELSON)



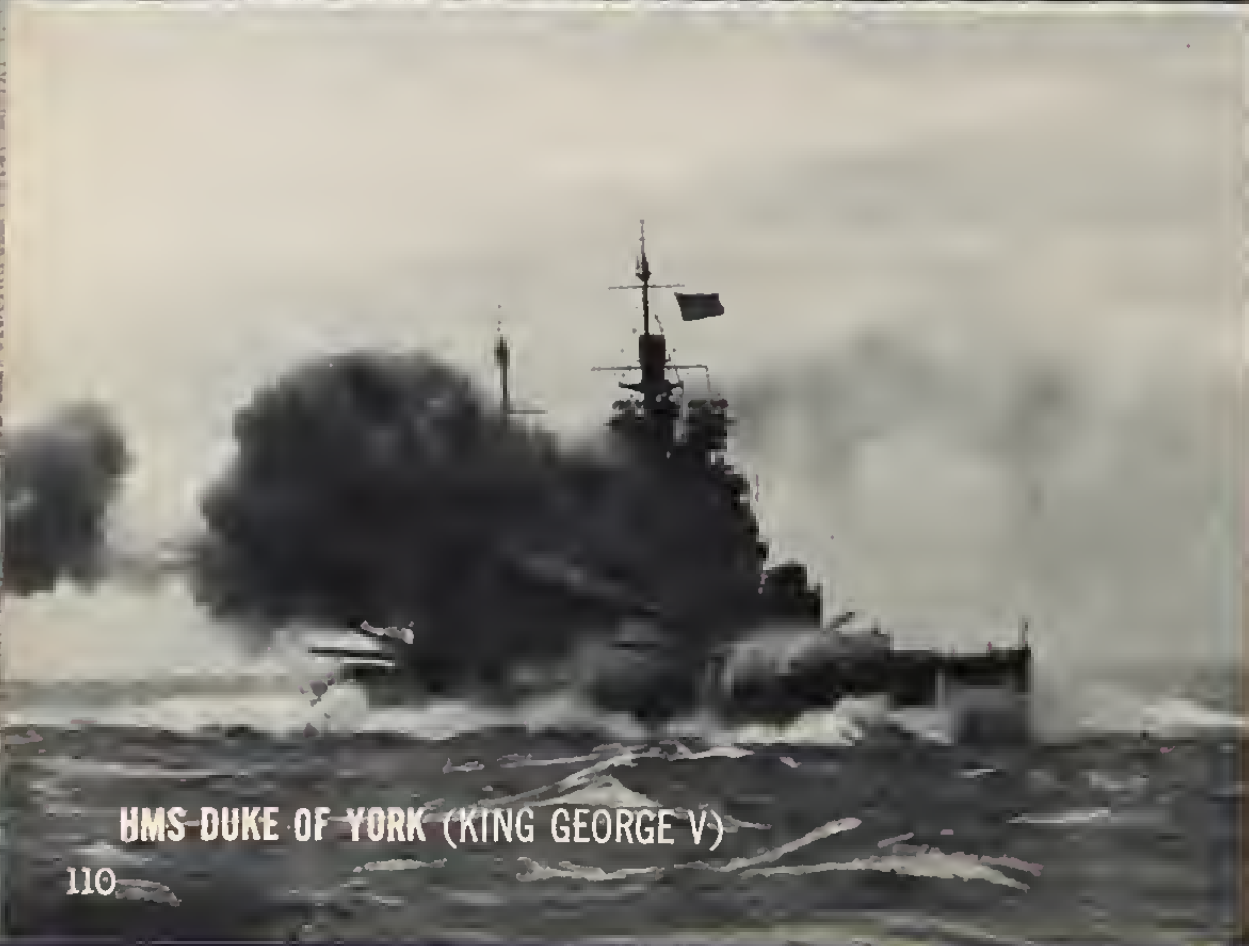
USS HOWE (KING GEORGE V)



HMS ANSON (KING GEORGE V)



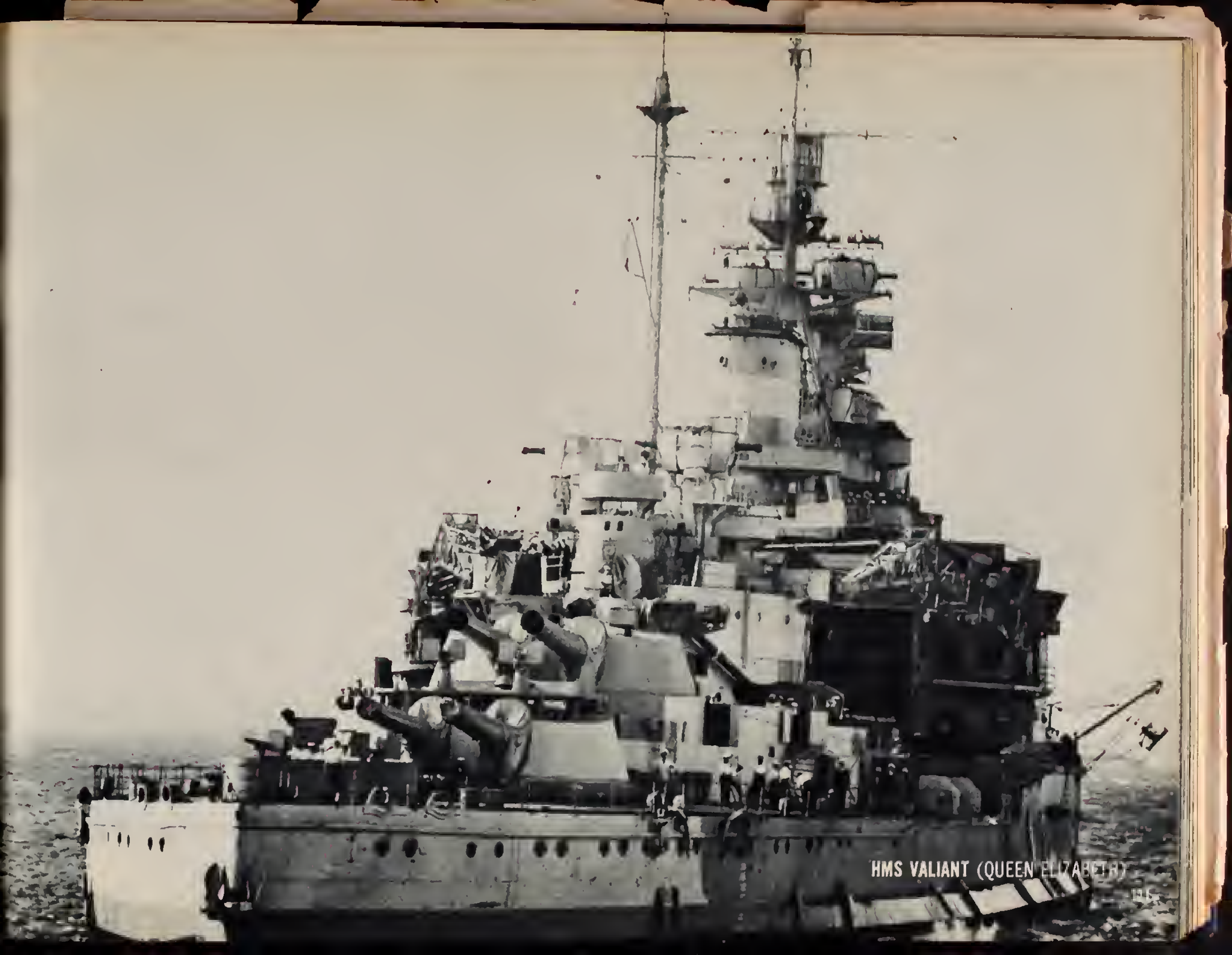
HMS KING GEORGE V (KING GEORGE V)



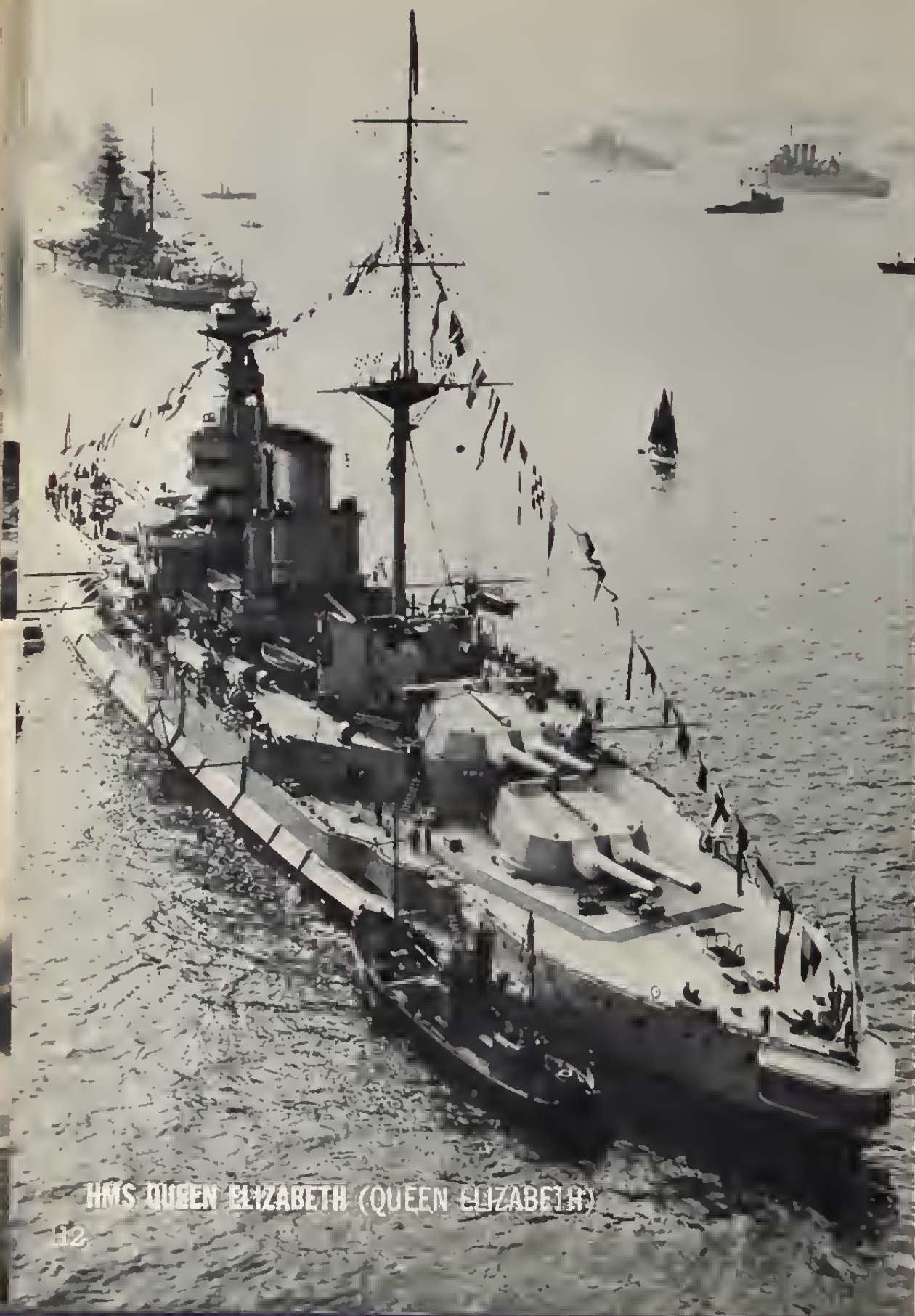
HMS DUKE OF YORK (KING GEORGE V)



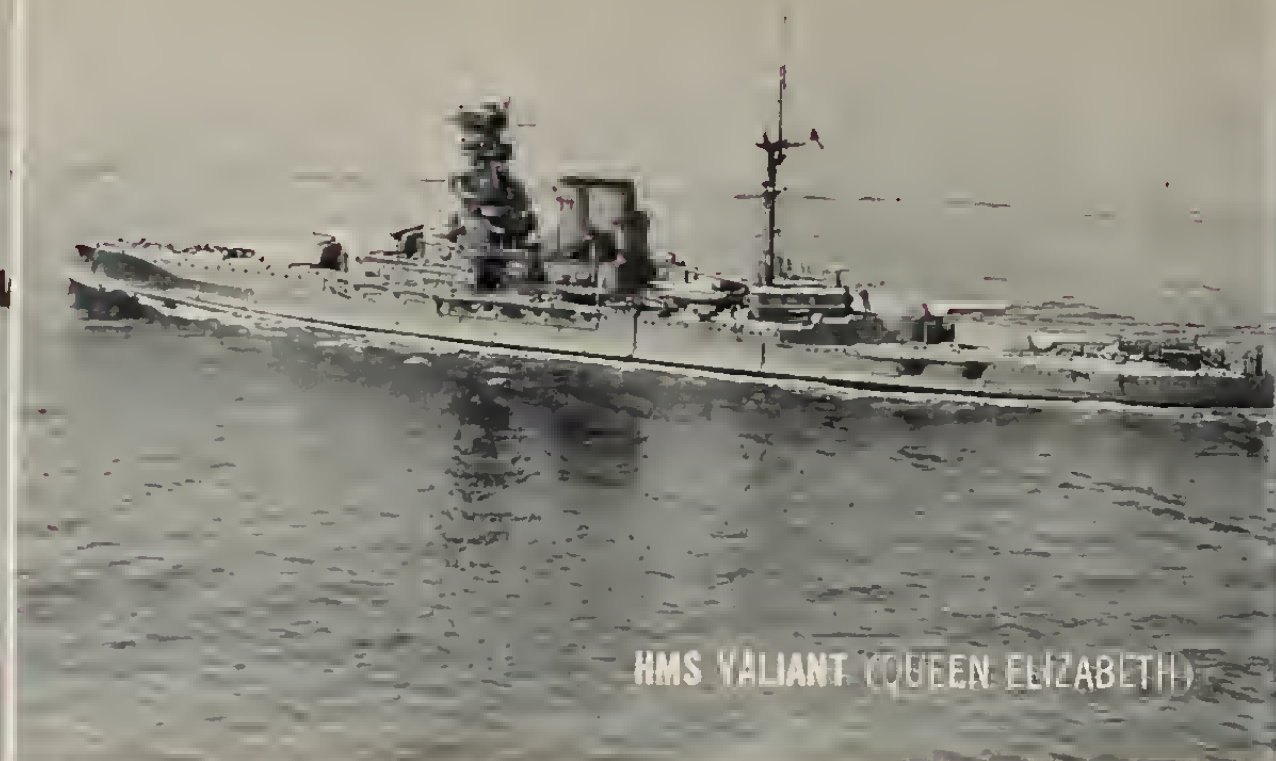
HMS KING GEORGE V (KING GEORGE V)



HMS VALIANT (QUEEN ELIZABETH)



HMS QUEEN ELIZABETH (QUEEN ELIZABETH)



HMS VALIANT (QUEEN ELIZABETH)



HMS QUEEN ELIZABETH (QUEEN ELIZABETH)



HMS WARSPITE (QUEEN ELIZABETH)



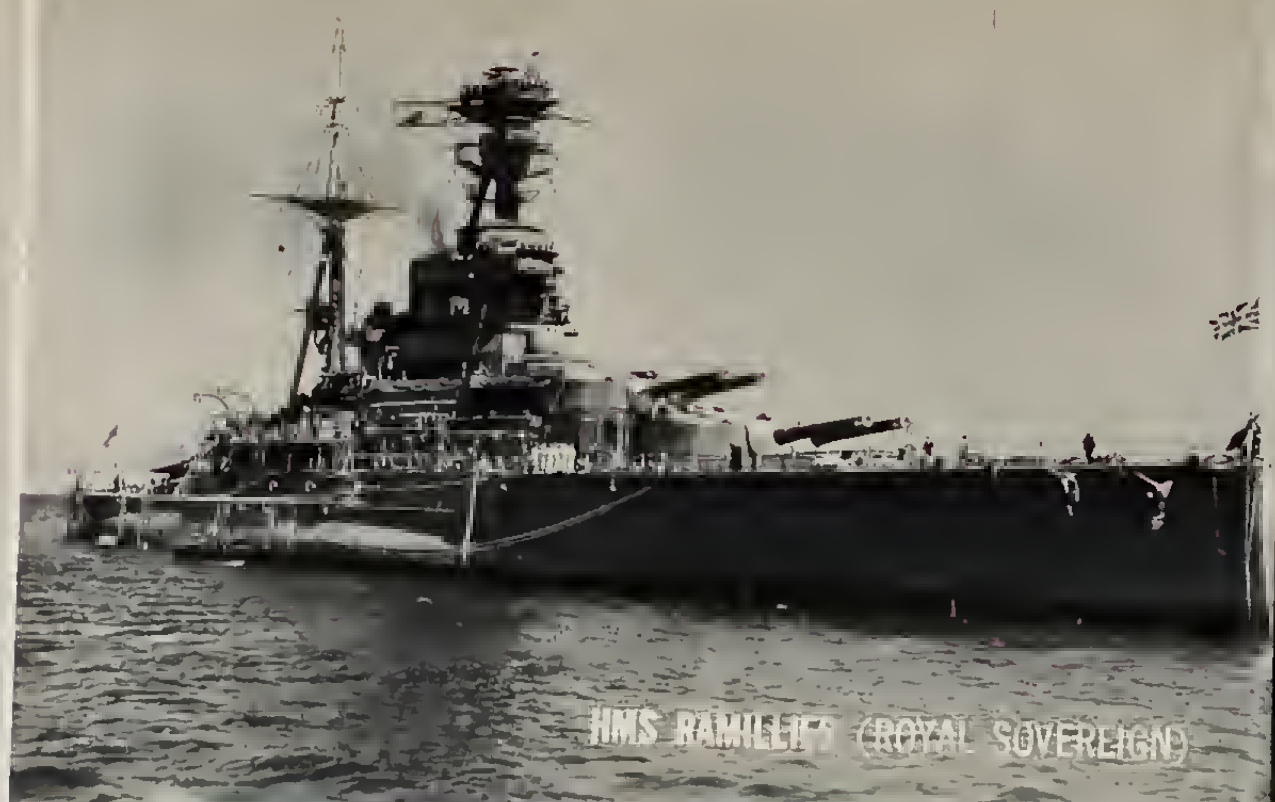
HMS MALAYA (QUEEN ELIZABETH)



HMS WARSPITE (QUEEN ELIZABETH)



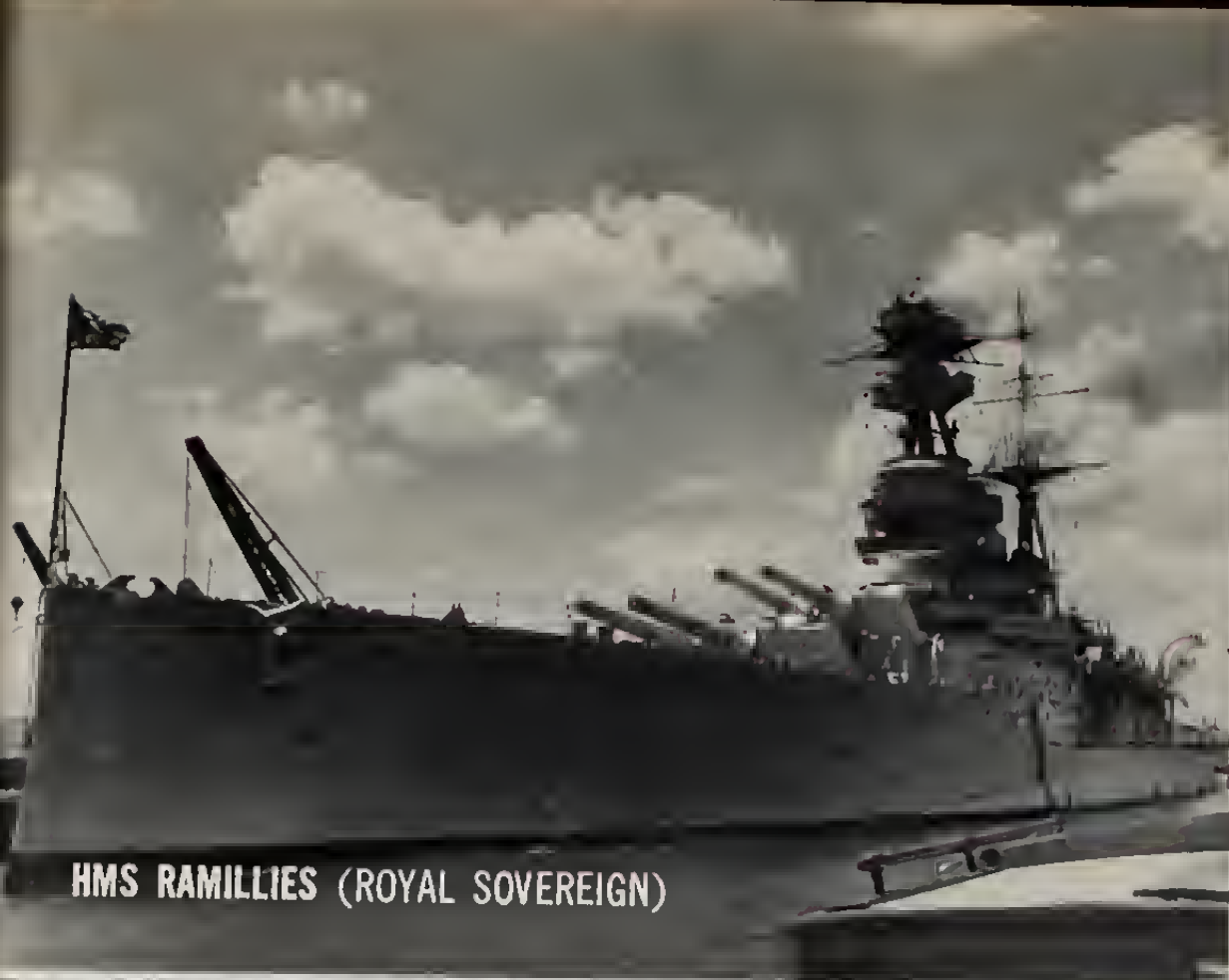
HMS RENOWN (RENOWN)



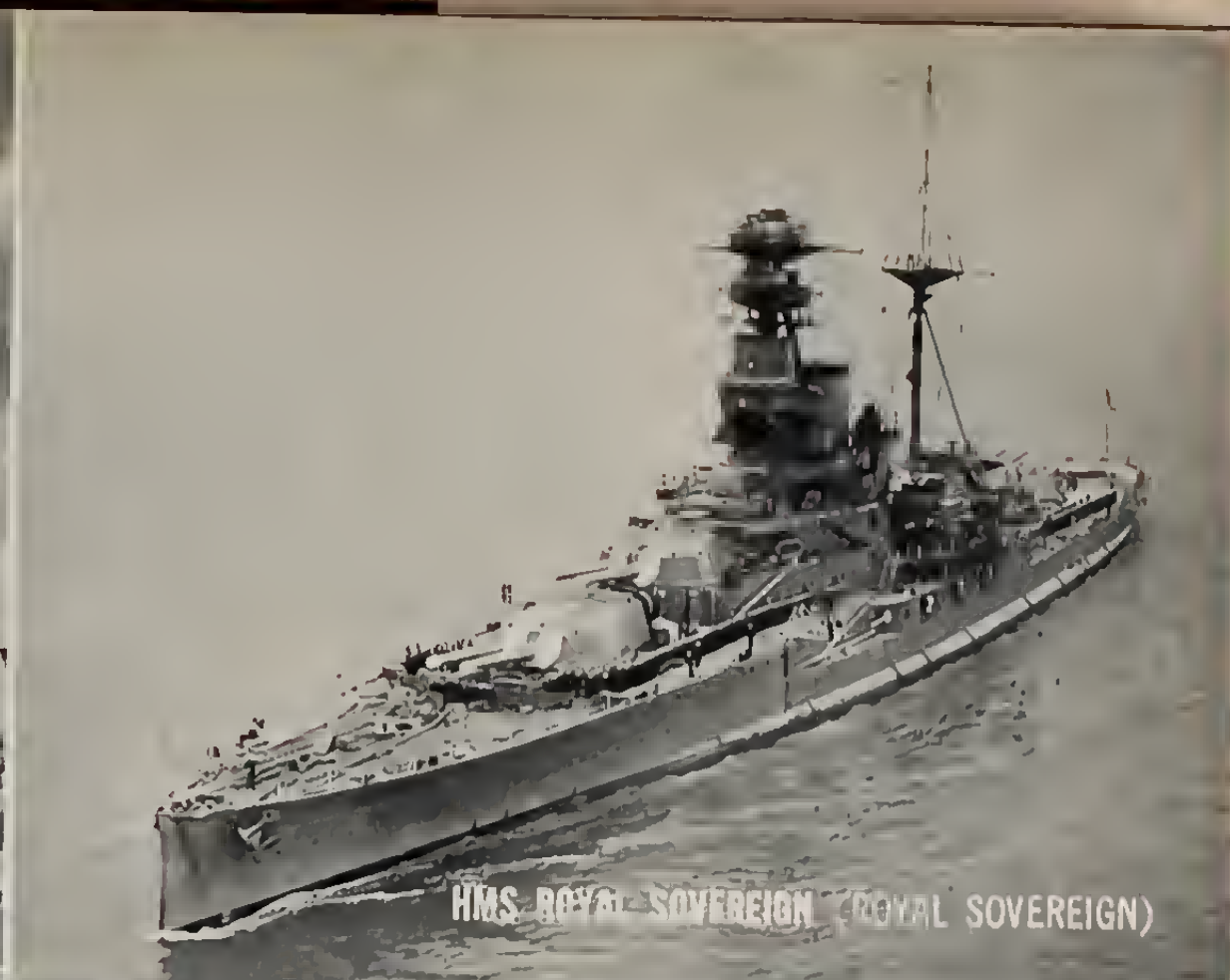
HMS RAMILLIES (ROYAL SOVEREIGN)



HMS RENOWN (RENOWN)



HMS RAMILLIES (ROYAL SOVEREIGN)



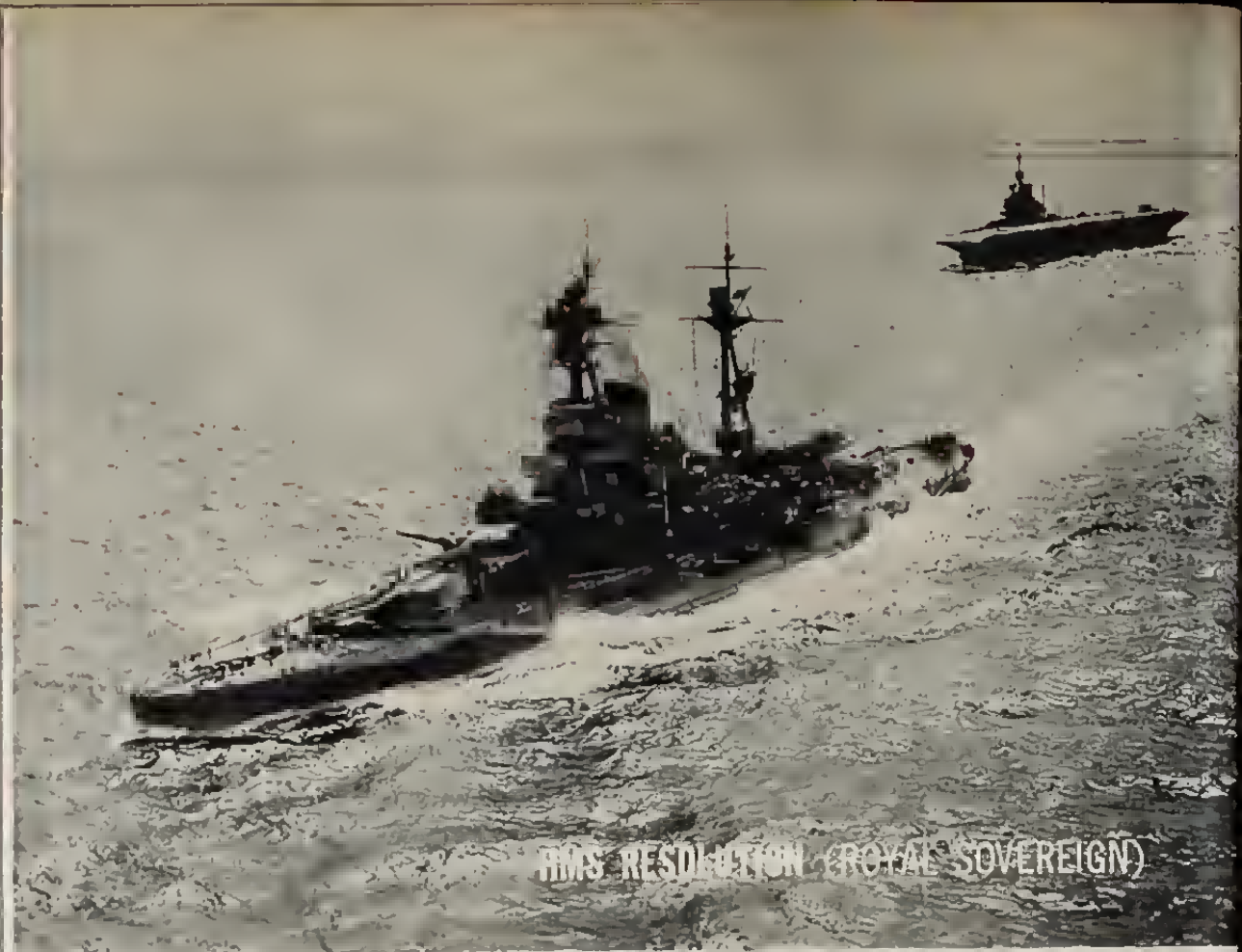
HMS ROYAL SOVEREIGN (ROYAL SOVEREIGN)



HMS RENOWN (RENOWN)



HMS REVENGE (ROYAL SOVEREIGN)



HMS RESOLUTION (ROYAL SOVEREIGN)



HMS REVENGE (ROYAL SOVEREIGN)



HMS INDOMITABLE (IMP)



GREAT BRITAIN AIRCRAFT CARRIERS

HMS ILLUSTRIOUS (ILLUSTRIOUS)



HMS INDOMITABLE (IMPLACABLE)



HMS VICTORIOUS (ILLUSTRIOUS)



HMS FORMIDABLE (ILLUSTRIOUS)



USS INTREPID (CV-11)



USS TRACKER (AGOS-1)



USS FURIOUS (AGOS-1)

GREAT BRITAIN - CRUISERS



HMS MAURITIUS (MAURITIUS)



HMS KENYA (MAURITIUS)



HMS NIGERIA (MAURITIUS)



HMS OIDO (DIDO)



HMS BELFAST (BELFAST)



HMS AURORA (ARETHUSA)



HMS NEWCASTLE (NEWCASTLE)



HMS SHEFFIELD (NEWCASTLE)



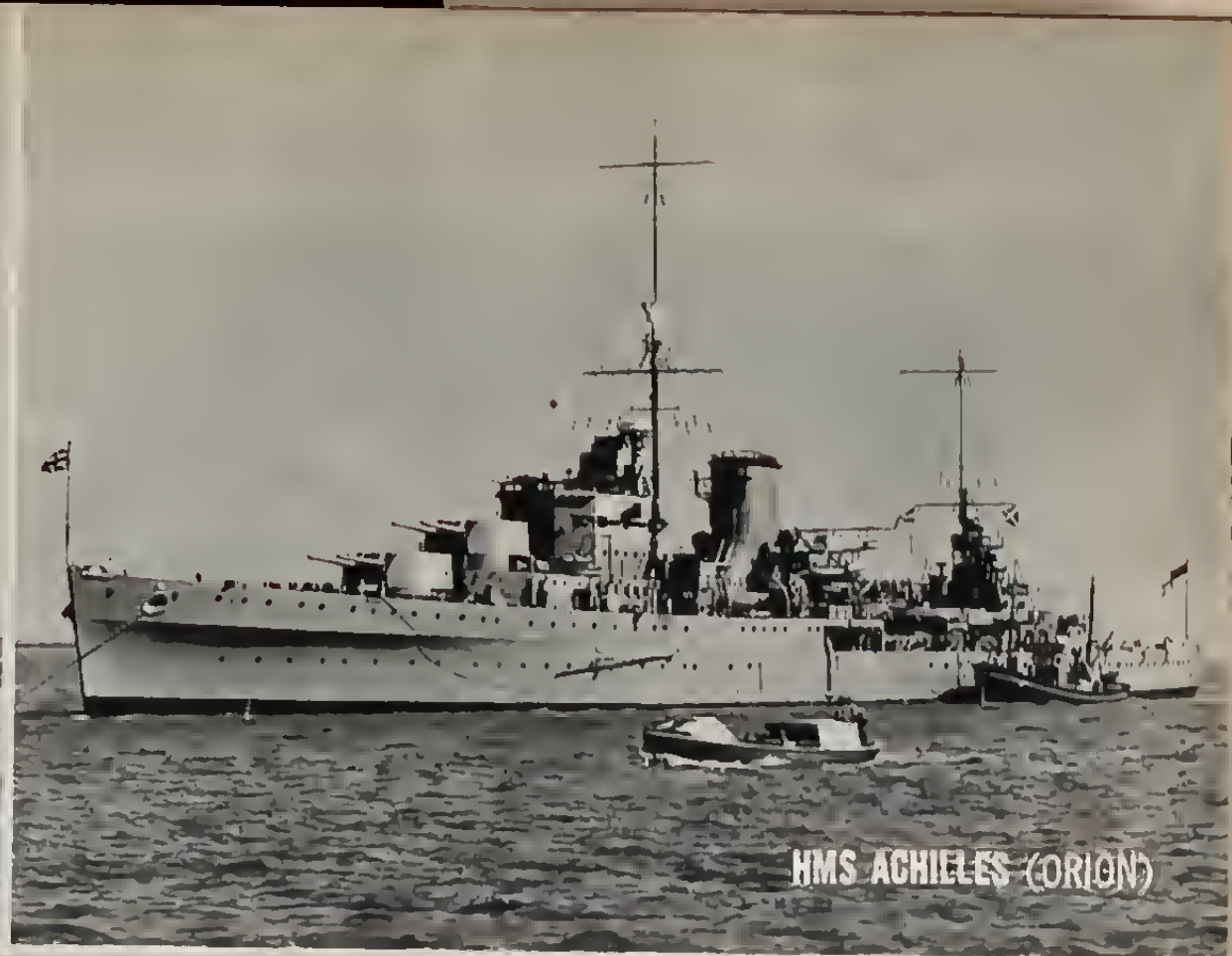
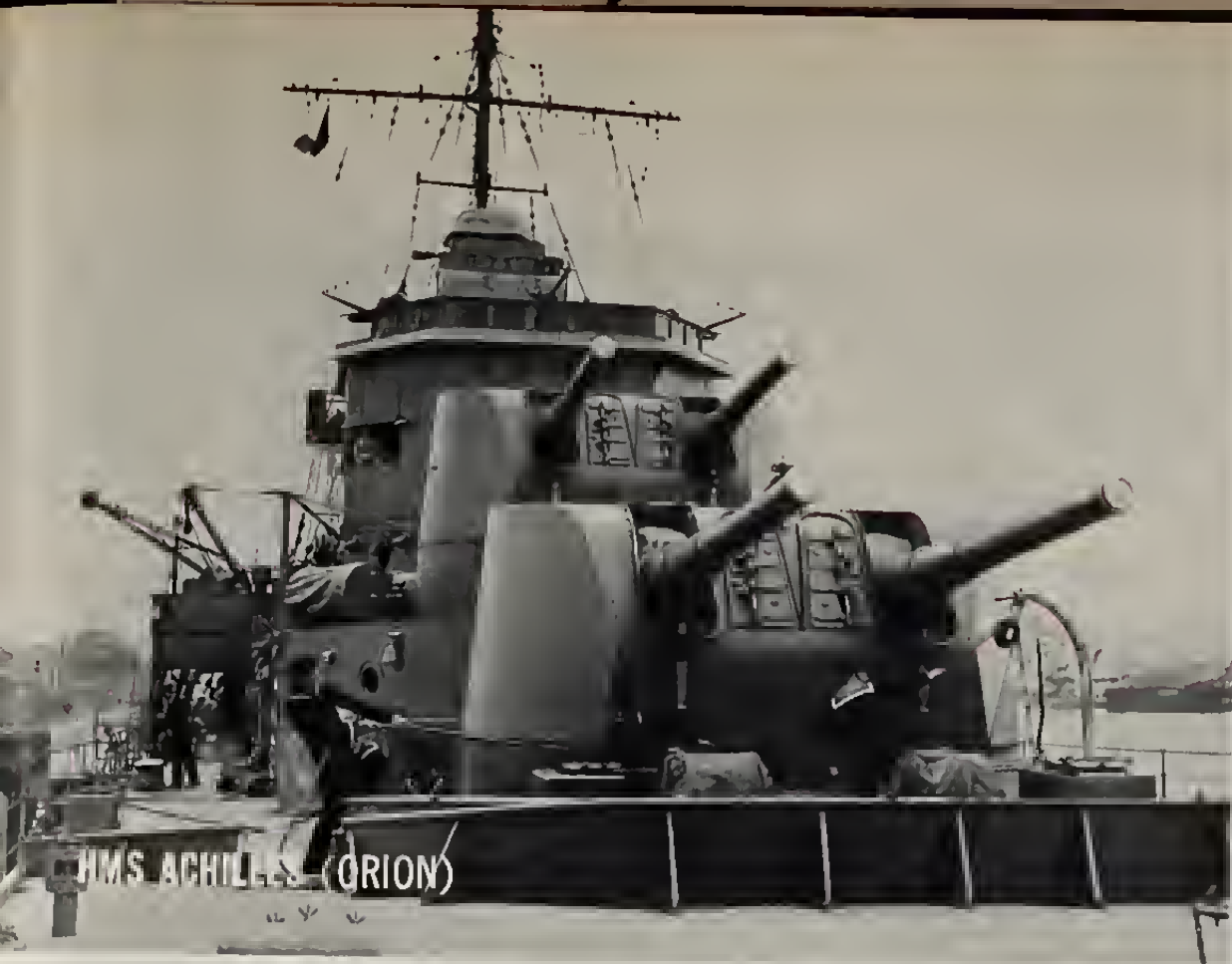
HMS SHEFFIELD (NEWCASTLE)



HMS LIVERPOOL (NEWCASTLE)



HMS PENELOPE (ARETHUSA)





HMS NORFOLK (NORFOLK)



HMS DEVONSHIRE (LONDON)

HM



HMS LONDON (LONDON)



HMS SIDOLPH (KENT)



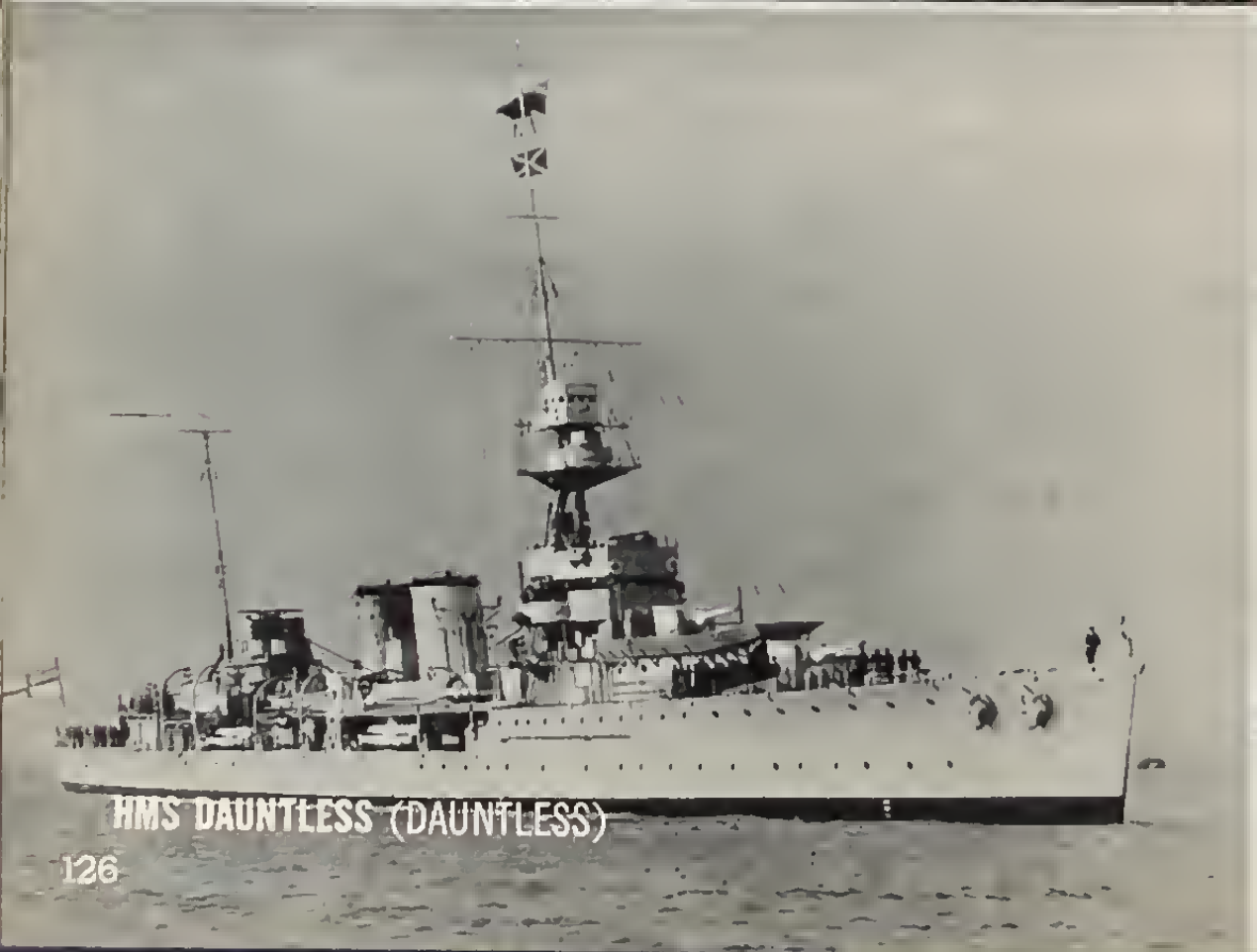
HMS KENT (KENT)



HMS DURBAN (DAUNTLESS)



HMS DURBAN (DAUNTLESS)



HMS DAUNTLESS (DAUNTLESS)



HMS VINDICTIVE (HAWKINS)

HMS



HMS CARDIFF (CERES)



HMS CARADOC (CALEDON)

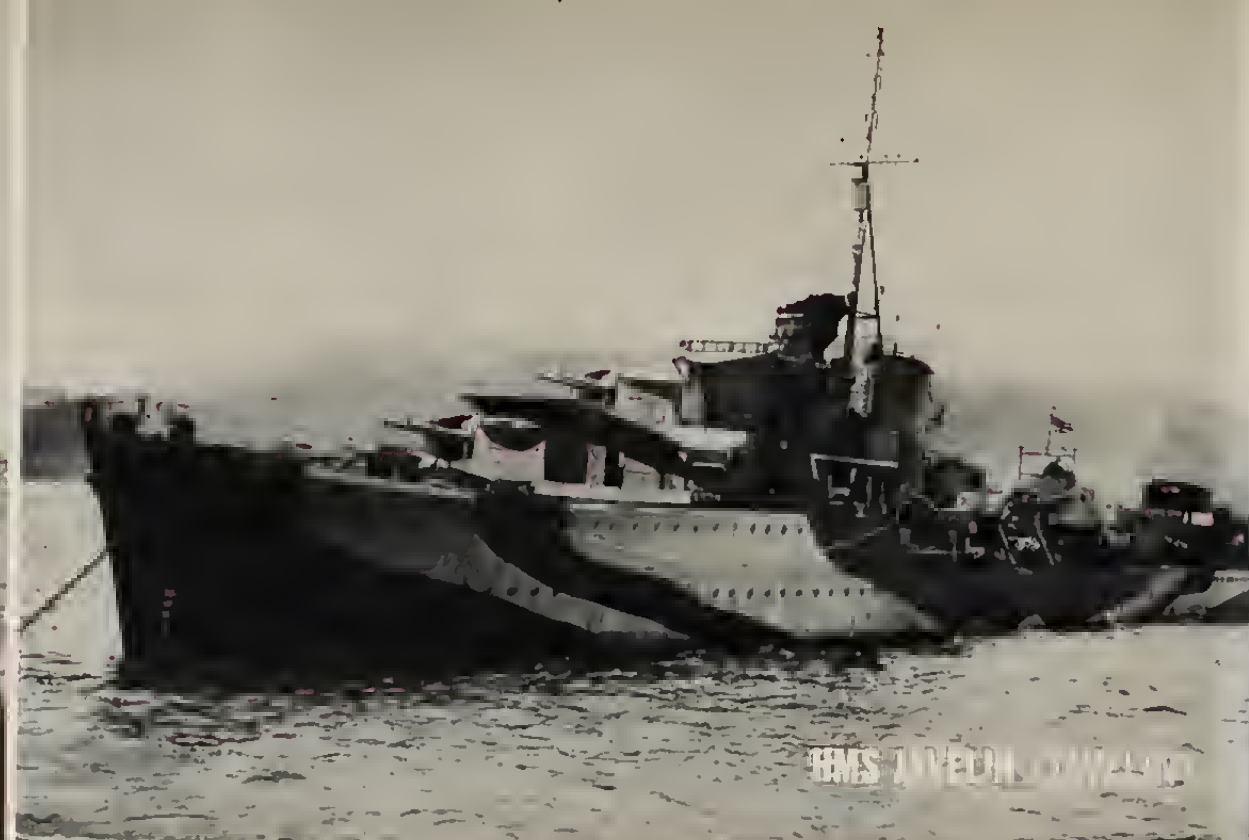


HMS CARLISLE (CARLISLE)

GREAT BRITAIN - DESTROYERS



HMS KIMBERLEY (KELVIN)



HMS JIVEDA (JAVELIN)



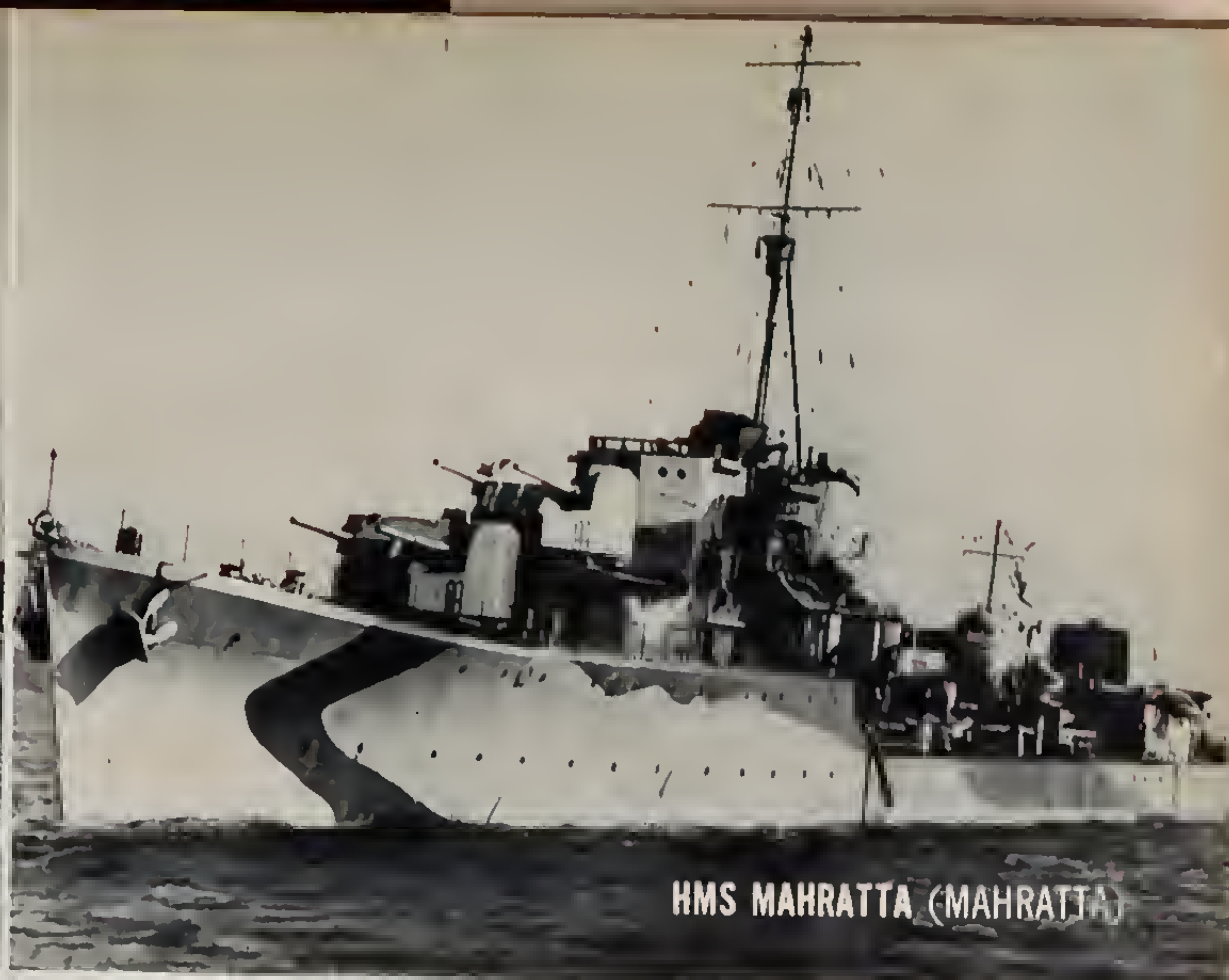
HMS ISIS (ICARUS)



HMS LOOKOUT (LAFOREY)



HMS CHIDDINGFOLD (HUNT)



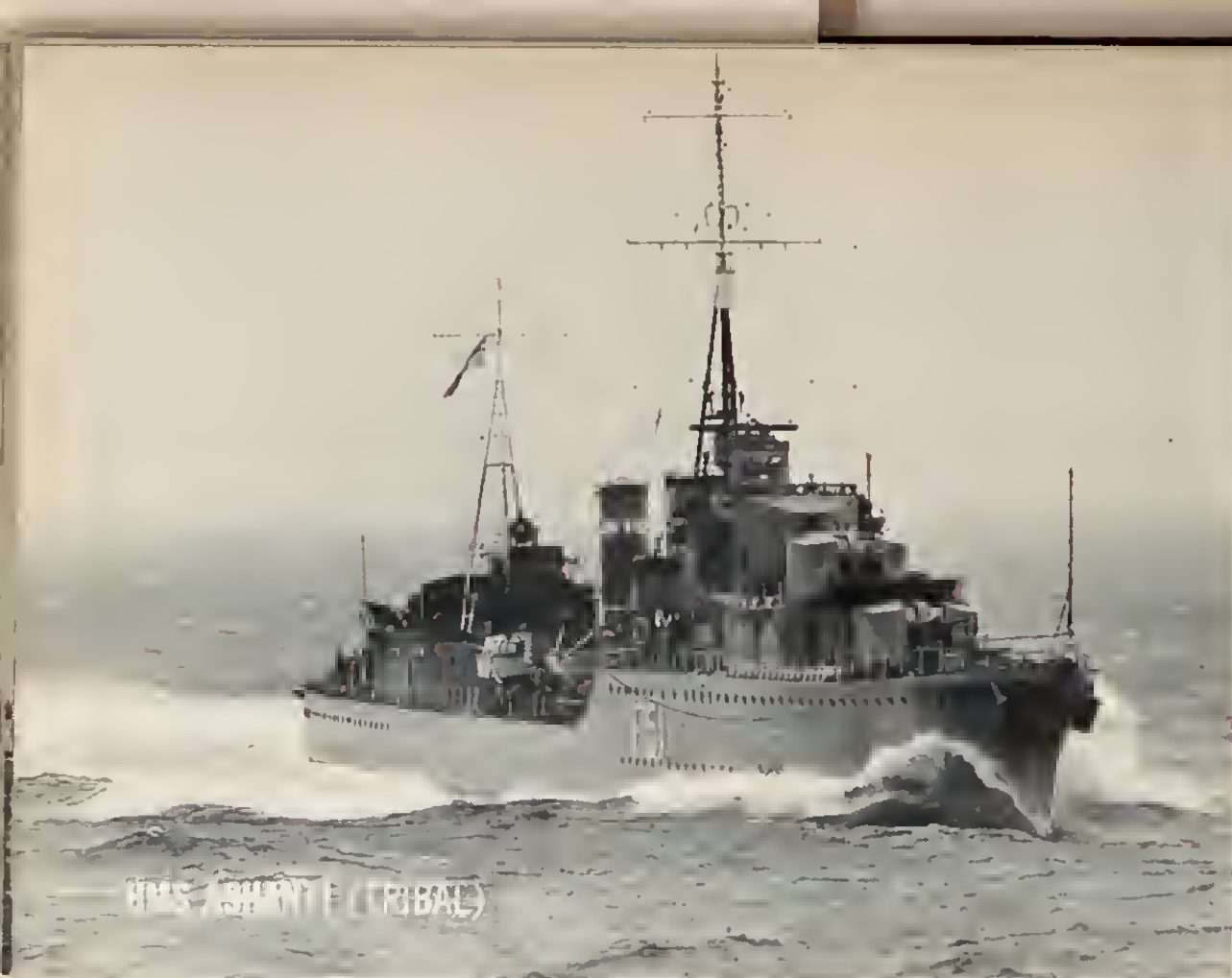
HMS MAHRATTA (MAHRATTA)



HMS FARNDALE (HUNT)



HMS ZETLAND (HUNT)





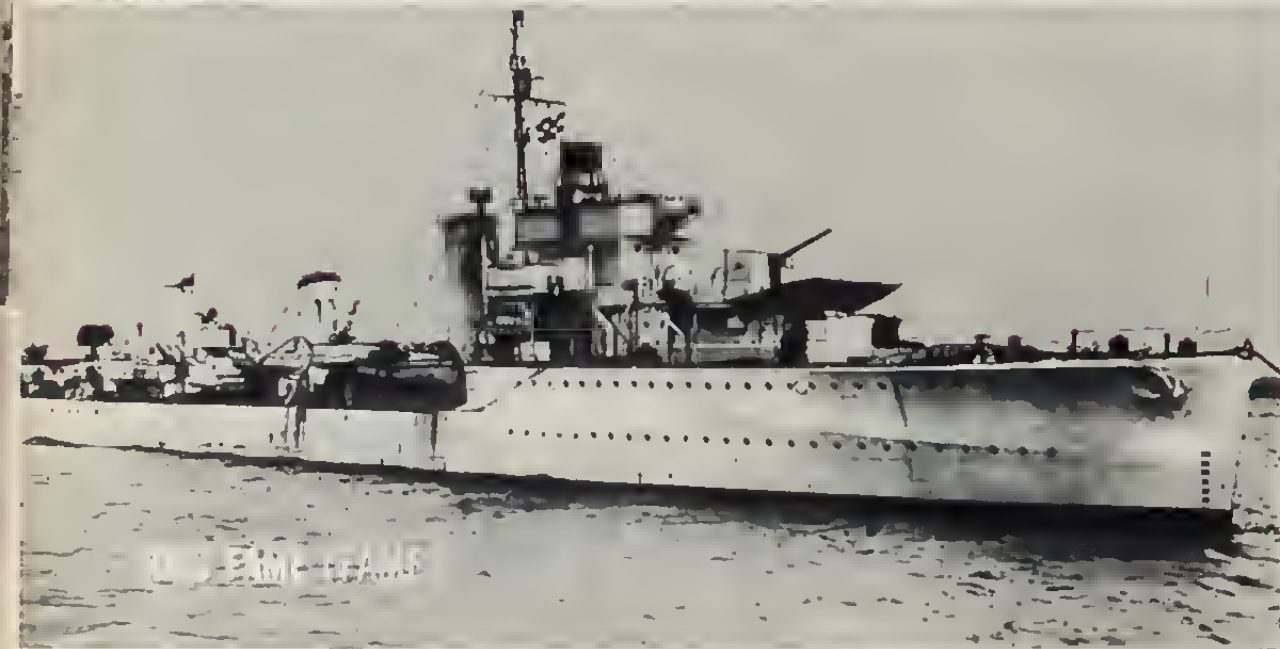
HMS ROEBUCK (ROTHERHAM)



HMS WALFIELD (W51)



HMS DUNCAN (DUN)



HMS EMPRESS (E15)



HMS FAULK NOR (FALKNOR)



HMS FOXHOUND (FAH)

H36



HMS FOXHOUND (FAH)



HMS BEAGLE (D30)



HMS GODFRINGEON (D31)



HMS AMAZON (D32)



HMS WOLVERINE (MODIFIED ADMIRALTY "W")



HMS WORCESTER (MODIFIED ADMIRALTY "W")



HMS VOLUNTEER (MODIFIED ADMIRALTY "W")



D41



HMS WALKER (ADMIRALTY "W")



HMS PEMBROKE (ADMIRALTY "W")



D55

HMS D55 (ADMIRALTY "W")



HMS CAMPBELL (CAMPBELL)

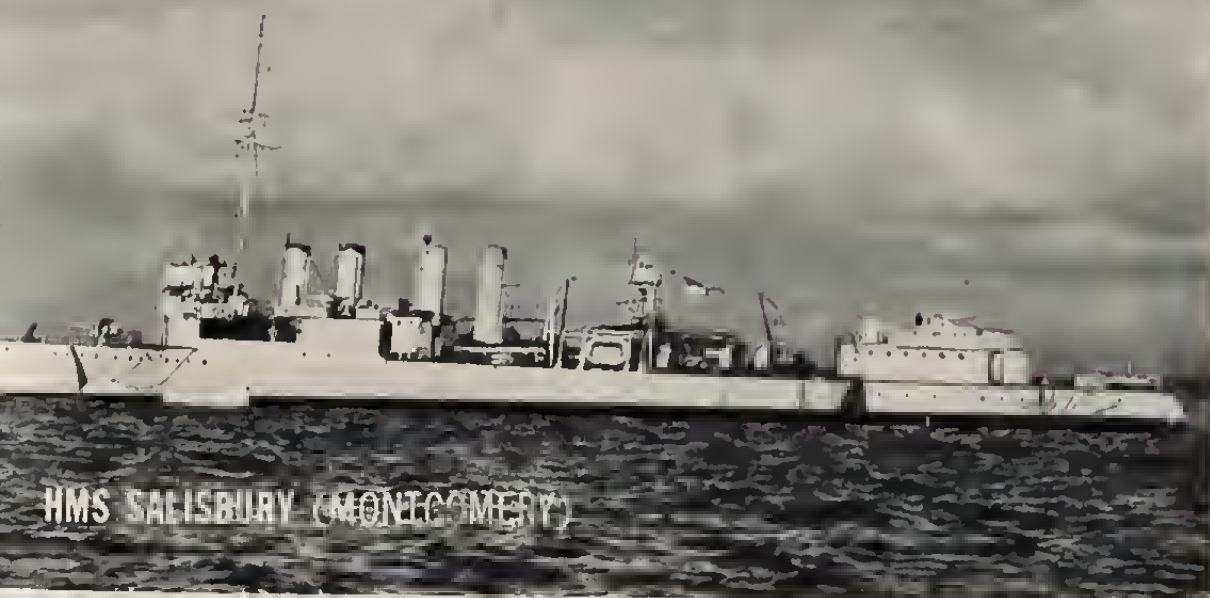
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HMS VANOC (ADMIRALTY "V")



HMS WOLFHOUND (VALOROUS)



HMS SALISBURY (MONTGOMERY)

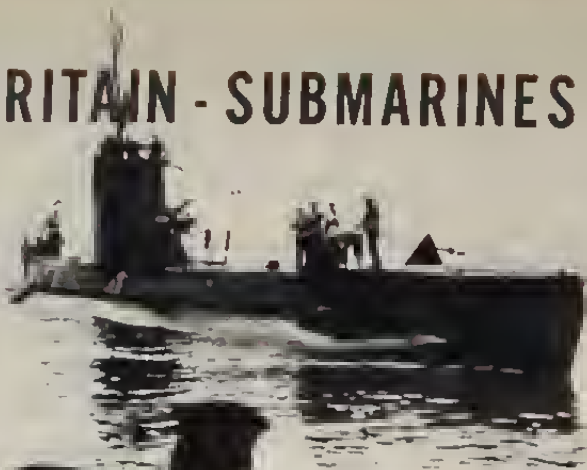


HMS SKATE (ADMIRALTY "R")

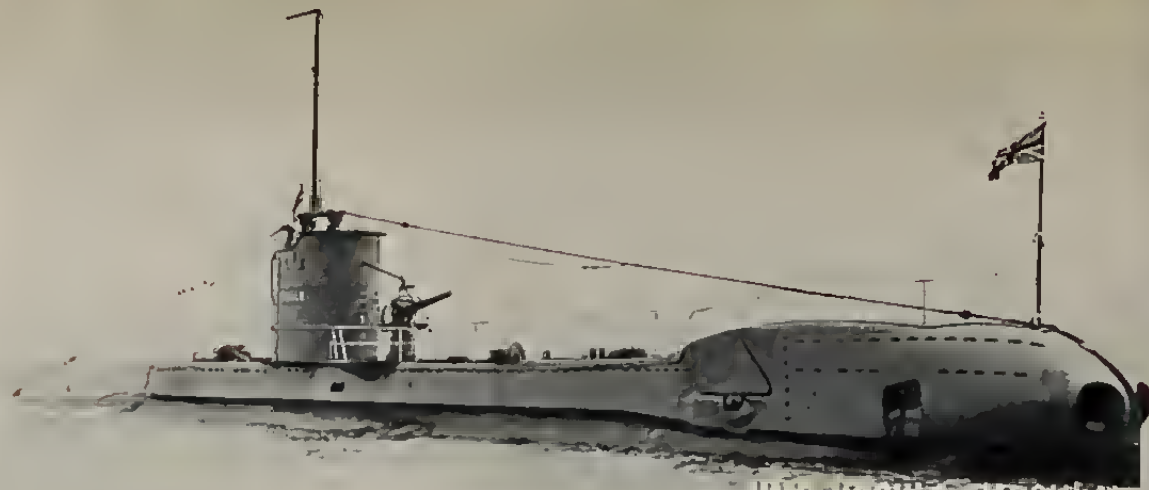


HMS SKATE (ADMIRALTY "S")

GREAT BRITAIN - SUBMARINES



HMS UMBRA (U95)



HMS URSULA (U95)



HMS ROVER (U95)



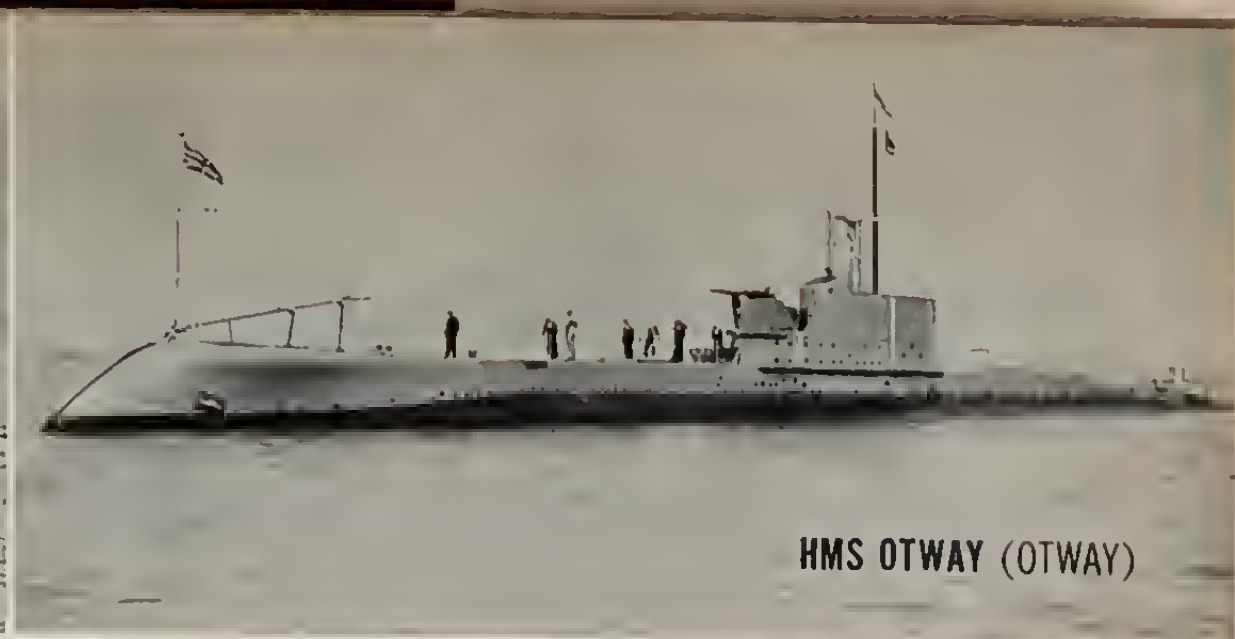
HMS UMBRA (U95)



HMS URSULA (U95)



THUNDERBOLT CLASS



HMS OTWAY (OTWAY)



HMS H-44 (H CLASS)



HMS SEVERN (SEVERN)



HMS TRIDENT (TRIDENT)

GREAT BRITAIN



HMS ANCHUSA (CORVETTE)

AUXILIARIES AND SPECIAL TYPES



HMS VETCH (CORVETTE)



HMS MYOSOTIS (CORVETTE)



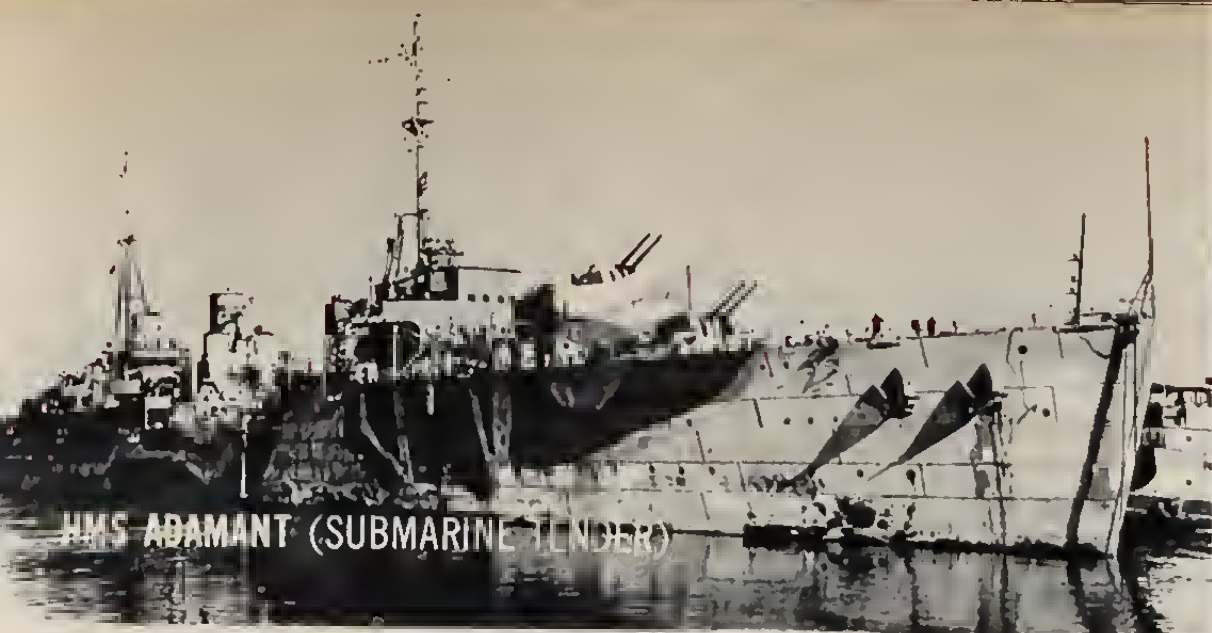
HMS HIBISCUS (CORVETTE)



HMS CYGNET (SLOOP)



HMS UNICORN (SLOOP)





LCP(L) 283 (LANDING CRAFT)



MOTOR TORPEDO BOAT



MOTOR TORPEDO BOAT



RESCUE LAUNCH



MOTOR TORPEDO BOAT



MOTOR TORPEDO BOAT



MOTOR TORPEDO BOAT



MOTOR TORPEDO BOAT

AUSTRALIA



HMAS AUSTRALIA (HEAVY CRUISER)



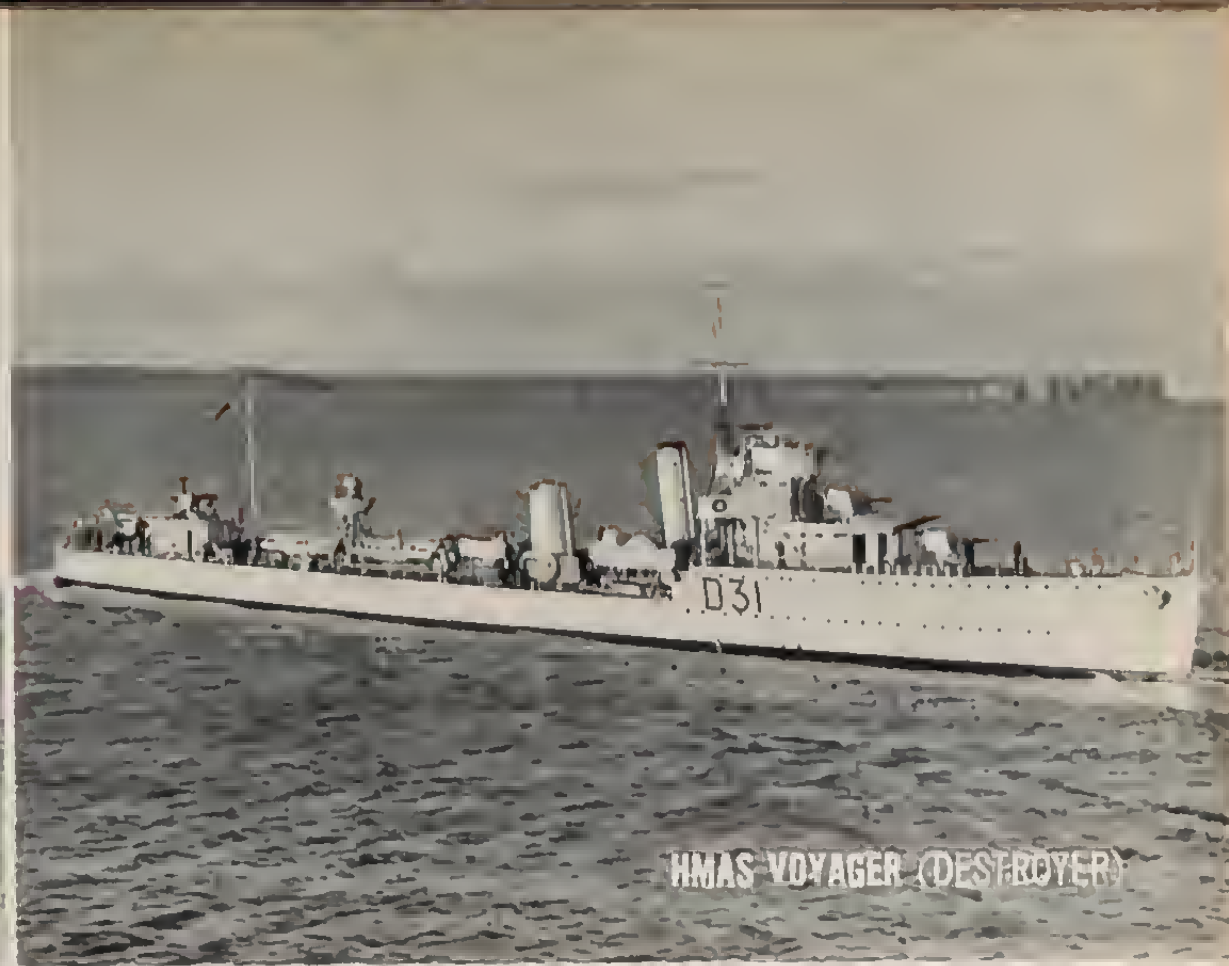
HMAS WARRAMUNGA (DESPATCH RIDER)



HMAS HOBART (LIGHT CRUISER)



HMAS STUART (DESTROYER)



HMAS VOYAGER (DESTROYER)



HMAS VAMPIRE (DESTROYER)





HOWARD (ARMED YACHT)



MINESWEEPER



COWICHAN CLASS MINESWEEPER



FAIRMILE MOTOR LAUNCH

U. S. S. R.

IN FEBRUARY, 1944 a Soviet naval force with a nucleus of two battleships shelled German strongpoints on the Estonian coast. Although it was similar to operations previously carried out by the U. S. and Great Britain in many parts of the world, the bombardment was nonetheless a notable event. One of the battleships, *Marat*, had been reported sunk by the Germans over two years before and the other, her sister *Oktiabrskaya Revolutia*, had been "heavily damaged."

Marat and *Oktiabrskaya Revolutia* were among the vessels caught at Leningrad by the German siege. *Marat* had, in fact, been damaged but *October Revolution* was unscathed. Throughout the siege her 12 twelve-inch naval rifles were active in the city's defense, and so the particular object of German attack. Notwithstanding frequent immobilization by ice, which made her a stationary target, and the expenditure of scores of planes by the Luftwaffe, the Germans were not able to drive home an effective blow.

Since June, 1941 the Red Navy has compiled an impressive record of successful operation under conditions of unusual adversity. For the greater part of the war, most of its major bases have been in the hands of the enemy, as have most Soviet shipbuilding centers. Leningrad, the largest, though not actually occupied, had to suspend shipbuilding. The Russian fleet thus has had no means of making up losses except in small vessels. Finally, the skies over many of its zones of operation were for a long time under complete enemy domination. The Navy, although overshadowed by accomplishments of the Red Army, has had an influential part in Soviet victory.

At the outset of the struggle between Germany and the USSR, the Soviet navy had a sea-going strength of three old battleships, seven to ten cruisers (three old), 22 or more heavy destroyers (all new), over 63 destroyers of standard proportions (about three-quarters new), about 30 torpedo boats (likewise three-quarters new) and more than 200 submarines. The strongest of the four fleets in which these vessels were grouped was the Red Banner Baltic Fleet, which comprised, beside *Marat* and *Oktiabrskaya Revolutia*, three or four cruisers, approximately half the destroyers and heavy destroyers and perhaps a third of the submarines. The Black Sea Fleet, maintained at the level required to outweigh the Turkish navy, had the third battleship, *Pariskaya Kommuna* (also a sister of *Marat*), the three old cruisers, one or two new ones, destroyers almost equal to those of the Baltic Fleet and a somewhat smaller number of submarines. The third Soviet naval force was the Northern Fleet, based on Poliamoe near Murmansk, consisting principally of icebreakers (armed in wartime), destroyers, escorts and submarines. Remaining ocean-going Soviet combatant vessels—a small number of destroyers and smaller craft and perhaps as many as 100 submarines—comprised the Far Eastern Fleet at Vladivostok and Possiet Bay.

Following the *Scharnhorst* sinking, the *Marat* and *Oktiabrskaya Revolutia* were the most powerful ships in the Baltic. In the interval before they reached Leningrad in 1941, however, the Germans were too strong afloat to be challenged

by the two Soviet obsolescents. On the first day of the war, moreover, a veritable Nazi armada—three battleships, two "pocket battleships," two cruisers, about 25 destroyers, a great many U-boats and 80 escorts and trawlers, aided by a Finnish force of two coast defense ships, five gunboats and 100 launches—mined the entrance to the Gulf of Finland, locking in the Russian Baltic Fleet. But the barrier was unable to hold back Soviet submarines, which broke through repeatedly to disrupt Nazi shipping in the Baltic. Upwards of 300,000 tons gross were sunk in the summer of 1942 alone, and in the first nine months of 1943, another quarter of a million tons. Together with long-range, land-based naval planes flying from the Leningrad area, which are responsible for about a fifth of the total, Soviet undersea craft sank about a million and a quarter tons of enemy merchantmen in the Baltic between June, 1941, and October, 1943.

Russian submarines have likewise been active in the Black Sea and Arctic and along the Norwegian coast, although targets have not been nearly so numerous as in the Baltic. In the first six months of 1943, for example, one of the most profitable periods in the Arctic, Soviet units (planes and submarines both) sank approximately 200,000 tons of German vessels. The totals for all theaters are, for the first 18 months of the war, 771 vessels with a gross tonnage of a million and a quarter tons; for the first two years, 960 vessels of 1,800,000 tons. This is very nearly as much new shipping as the Reich has been able to build since September, 1939, despite adoption of the standardized Hansa vessel design, German equivalent of the Liberty ship.

One of the principal types of submarine employed by the Northern Fleet and probably by the others as well is the 200-ton (surface displacement) "*Malodki*," (condensation of the Russian phrase for "small submarine"). The *Malodki* is one of the few naval types in which the Red Navy has been able to replace losses, for it is fabricated in sections at inland factories and can be shipped by rail for assembly at whatever port it will be based. The *Malodki* was actually the first such craft to be built since the Germans attempt to build sectional U-boats in the last war for assembly at Austrian Adriatic ports. The first *Malodkis* were built in a plant at Gorki about 1928. There was no report of their further construction after 1930. But they are in production now and may well have been during the intervening period, too. The *Malodki's* radius is too short for effective open sea work. On the other hand it has proved well suited to the tricky waters of the deep-cleft Norwegian coast.

Although at one time they occupied nearly 90 per cent of the Soviet Black Sea littoral, the Germans were never able to make regular use of the Black Sea itself, as they lacked both shipping and combat vessels in that area. Further, the Soviet Black Sea Fleet successfully improvised an operating base for vessels up to destroyers at Tuapse, a small port on the stretch of coast that remained in Russian possession throughout. It operated from Tuapse until some time after the recapture of the better part of Novorossisk in 1943.

Beside participating in the Allied offensive against German shipping, the Northern Fleet has shared in the arduous duty of protecting the convoy route to Murmansk and Archangel in cooperation with British and American warships. Two years after the Northern Fleet was established (1933), the Soviet government completed a canal from Leningrad to the White Sea, which even before the savage Arctic convoy battles of 1942, enabled the Soviets to reinforce the Northern Fleet with destroyers and other vessels from besieged Leningrad. Some Baltic Fleet cruisers as well may have resched the Arctic via the White Sea Canal. American-built submarine chasers acquired under lend-lease are now also serving with the Northern Fleet.

At the beginning of the war, the Red Navy operated at least six flotillas of heavy river gunboats (better described as river monitors) in addition to its sea-going craft. They were on the Polish Bug (1940 Russo-German border), the Prut and northern mouth of the Danube (the 1940 boundary between the Soviet Union and Rumania), the Dniester, the Dnieper, the Volga and the Amur. The first four were engulfed in the retreat of 1941. However, the Volga flotilla, equipped with a great number of unusual types of craft such as speedboats carrying tank gun and turret installations, took part in the historic defense of Stalingrad. Doubtless similar river craft have participated in the advance of the Red Army back to the Dniester in 1943-44.

Like the German, and unlike the American, Soviet coastal artillery units are a part of the navy. Moreover, going back to the time in 1919 when well-disciplined Communist sailors from the Leningrad naval base of Kronstadt were used to stiffen units of the newly-formed Red Army, Soviet sailors have a strong tradition of fighting on land whenever the occasion requires it and in the 1939-40 Russo-Finnish war demonstrated their versatility by fighting as ski troops.

In addition to three regiments of marines, the garrison of Sevastopol in 1942 included six volunteer naval detachments. Sailors held the key fortification of Oreshek, where the Neva River flows out of Lake Ladoga, during the entire siege of Leningrad. Other sailors were ashore at Stalingrad and still others manned a cement factory that was made into the principal defense work below Novorossiisk, one of the points where the Nazi drive into the Caucasus was stopped. Novorossiisk harbor was also covered and made useless to the Germans throughout their stay by another naval unit, a coast defense battery evacuated from Sevastopol. Sailors likewise led the landing operation by which Novorossiisk was finally recaptured in September, 1943, paced the landings at Anapa, Mariupol and Taganrog, and in 1941 fought in the defenses of Libau, Tallinn, Ismail, Odessa and the Kola peninsula with its precious port of Murmansk.

During the first two decades of the Soviet regime, the Red Army and Red Navy were under the same ministry, the Commissariat for Defense, and the navy was in practice a part of the army. A separate commissariat was not established until Jan. 15, 1938. The step followed initiation of the first large Soviet program of surface ship construction the year before, under the Third Five-Year Plan (1937-42). The program progressed so far that in 1939 it pro-

duced 112 vessels and in 1940, 168, for the fleet was soon to meet a test of extraordinary severity.

Soviet naval officers are the products of an elaborate system of schools which before the war numbered 14. Like their opposite numbers in the Army, even the highest ranking officers are extremely youthful. The Navy Commissar is 43 year-old Adm. Nikolai G. Kuznetsov. The officers immediately under Adm. Kuznetsov are: Adm. Ivan S. Isakov, chief of staff; Vice Adm. Stepanoff, assistant chief of staff; Adm. Vladimir P. Trubitz, commander of the Baltic Fleet; Adm. Arseny G. Golovko, Northern Fleet; Adm. Ivan S. Yumashev, Far Eastern Fleet; and Vice Adm. F. S. Oktiabsky, Black Sea Fleet.

The Red Navy uses army ranks for all officers except deck and engineer. Commander of the coastal batteries and coastal aviation, which is also under naval control, are generals. The coast artillery, coast aviation and other related units comprise the Coastal Defense Service.

The Red Navy also follows the Red Army's system of decorations. Highest award is the title Hero of the Soviet Union. Admirals who win victories by unusual strategy may receive the coveted army Suvorov medal. However, there are two special naval analogues of the Suvorov award, the Orders of Ushakov and Nakhimov. Adm. Ushakov was a contemporary of Suvorov (the only general who ever beat Napoleon in his prime) and Adm. Nakhimov defeated a Turkish fleet at Sinope on the Black Sea coast in 1853. The Red Army's group decorations, the designations as either Guards or Red Banner units (with raises in pay and other practical rewards as well as flags), are also employed by the Navy.

In the past, Russia has been an in-and-outer as a naval performer. In the time of Peter the Great, who established the first Russian state fleet which can be defined as a navy, the Russians performed well both in the Baltic and in the Sea of Azov, when Peter wrested the Azov coast from the Turks (1695-96). A century later, in the Russo-Turkish war of 1787-91, a Russian fleet of 60 sail based on Sevastopol dominated the Black Sea. The Russians likewise won resoundingly under Adm. Nakhimov. In the Crimean War only a year after Sinope, the Russian fleet accomplished little and as the iron, then the steel warship superseded wood it slipped further, to the disaster of Tsushima in 1905 when the Baltic squadron, after a voyage half way around the world to replace a fleet lost in the fall of Port Arthur, was crushed by a Japanese fleet under Adm. Togo. New fleets were built after Tsushima but they too were all but destroyed during the Russian civil war. The Soviet government, however, is giving the Red Navy the industrial base it always needed, and the Russians have demonstrated a mastery of modern naval weapons. The Soviet Union may well elect to rebuild the battleships, cruisers and destroyers that were on the ways in 1941 and either had to be suspended (as in Leningrad) or destroyed to avoid enemy capture (as at Nikolaiev). She may also receive from the U. S. or Britain or both ships equivalent to a third of the surrendered Italian fleet—one or two battleships, two or three cruisers and several destroyers. If so, a new power may join the naval constellation.

U. S. S. R.



PARISKAYA KOMMUNA (BATTLESHIP)



MARAT (BATTLESHIP)



MARAT (BATTLESHIP)



KIROV (HEAVY CRUISER)



KRASNI KAVKAZ (HEAVY CRUISER)



PETROVSKI CLASS DESTROYER



STREMITELNI CLASS DESTROYER



AURORA (FRANKLIN SHIP)



KRASNI KRIM (HEAVY CRUISER)



SMETLIVI (DESTROYER)



FLOTZKI CLASS DESTROYER



O-38 TYPE ESCORT



SHCHORM CLASS TORPEDO BOAT



PETROVSKI CLASS DESTROYER



TASHKENT (DESTROYER)



GARIBALDIETZ CLASS SUBMARINE



D CLASS SUBMARINE



KOMSOMOLKA CLASS SUBMARINE



KOMSOMOLKA CLASS SUBMARINE



S CLASS SUBMARINE



S CLASS SUBMARINE



S CLASS SUBMARINE



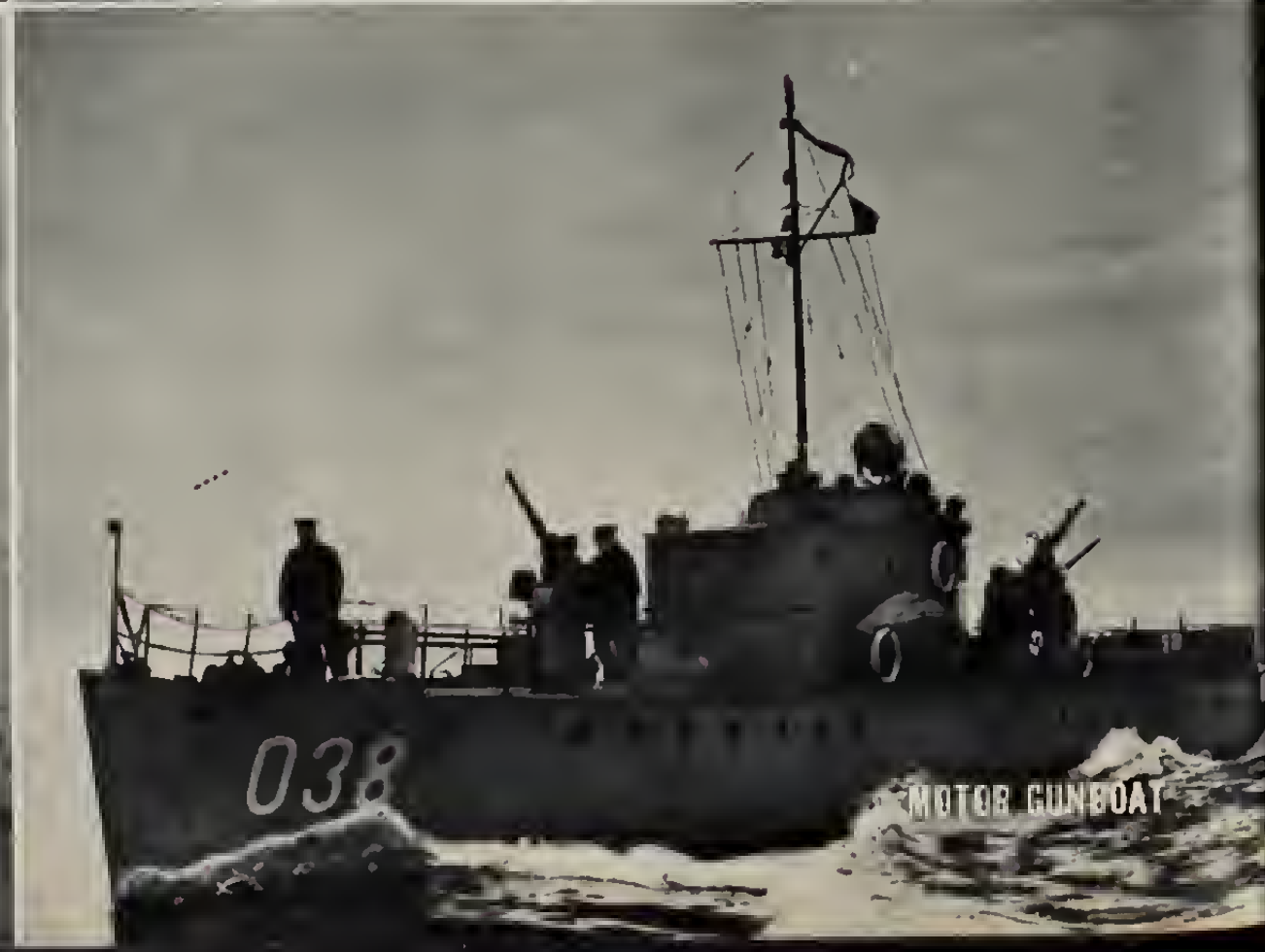
MOTOR GUNBOAT



MOTOR TORPEDO BOAT



ARMORED SPEED BOAT



MOTOR GUNBOAT



SERGEI ORJONIKIDZE (ICEBREAKER)



LAZAR KAGANOVICH (ICEBREAKER)



JOSEPH STALIN (ICEBREAKER)



YERMAK (ICEBREAKER)

FRANCE

THE FIRST French force which can be said to have comprised a fleet was fitted out by Philip II, who found England in possession of most of northern France when he ascended the throne in 1180. Seizing a strip of English Channel coast from the Count of Flanders, Philip built ships with which he harried the English through most of a thirty-year war. His fleet was finally annihilated by King John at Damme in 1213, but he had succeeded in expelling the English from most of their French territories. A Mediterranean fleet was built about 1248 by Philip's grandson, Louis IX the Saint, for crusades to Dalmatia and Tunis. Louis also established the first French dockyard and created the office of Admiral of France, equivalent to Lord High Admiral in Britain, appointing to this office two Genoese, Jacopo di Levante and Ugo Lercari. The French navy has had a continuous existence since, though frequently more nominal than real, especially in its earlier years.

Owing to renewed rivalry with England, at the beginning of the fourteenth century Philip IV, the Fair, brought in another group of Genoese to erect a royal dockyard at Rouen and lay the foundations of a second Channel fleet. Philip's successors built it up further. However, in 1340 it was caught in the Flanders port of Sluys, and 155 of its 189 vessels were destroyed by a surprise attack which permitted England to land ravaging armies almost at will during much of the subsequent Hundred Years War.

With the exception of two brief interludes — 1377-88, when English power in the Channel suffered a sharp decline (due to peasant revolts in England and the incompetence of the regency over child-king Richard II) and 1515-47, the reign of France's vigorous Francis I — the French navy languished for nearly 300 years after Sluys. When Cardinal Richelieu became the first minister of Louis XIII in 1624, he found it virtually non-existent. Ships had to be borrowed from England for Richelieu's campaign to break the political power of the Huguenots. He set about its reconstruction at once, however, not only to strengthen the state power, but to assure French participation in settlement of the New World and the growing European trade with the East Indies. In 1626 he replaced the Admiralty with the office of Grand Master and Superintendent of Navigation, and appointed himself to the post. The fleet was given a dual organization (Atlantic and Mediterranean), new ships and new personnel.

The French navy declined considerably again after Richelieu, despite the efforts of the Grand Monarch, Louis XIV (1643-1714), who introduced compulsory naval service for inhabitants of the coasts and river valleys and expanded the dockyards of Brest, Rochefort and Toulon. Louis' navy, unfortunately, was officered almost entirely by the nobility, whose corruption and inefficiency were already a by-word. At this time, however, England and Holland, the leading naval powers, were locked in a series of desperate struggles, enabling France to reach a position of great influence as a sea power and acquire an extensive trade with the Orient.

Louis XIV's erection of France as the greatest power on the mainland of Europe won for her the enmity of Great Britain. As a consequence, between 1689 and 1815 the two countries were seldom at peace, and France suffered a series of costly defeats. France was compelled to fight on land and sea at once, while Britain, usually aided by at least one major European army in the field, was able to confine her land efforts to moderate expeditionary forces, the process reaching its conclusion in the Napoleonic wars.

The lengthy struggle with England has left a sediment of Anglophobia which persists in some sections of the French navy to this day and accounts in part for the refusal of many French commanders to bring their vessels over to the United Nations side during 1940-42. In the nineteenth century, it led to repeated naval scares in both England and France. Every new naval weapon — the steamship, the iron armorclad, the torpedo and the submarine — was seized upon by French jingoists as the means of cutting down the hated colossus of the Royal Navy. British jingoists in turn exploited ill-tempered French remarks for their own purposes. The scares were ludicrous, for France was no longer the first state of the continent and England and France were several times allied. They made France, however, the leader in developing both the torpedo boat and the submarine. French inventors pioneered most essential features of the modern submarine except the Diesel and electric motor system of dual propulsion. In 1906, when Germany acquired her first undersea craft, France had 84.

The Franco-Prussian war of 1870-71 involved no naval action of significance, but had far-reaching effects on the French fleet. After 1871, French thinking was dominated by a desire to avenge the loss of Alsace-Lorraine. France was determined to build an army matching the German. As the German population exceeded that of France by half, the French naval establishment was bound to suffer as a whole despite the attention lavished on new weapons like the submarine. The attention paid to the submarine and torpedo boat, in fact, reflected this neglect: France had turned to them in search of cheap naval instruments. By 1908, as a consequence, with the furious Anglo-German naval race already under way, the French fleet lagged far behind the German — now its principal enemy — in total tonnage. Moreover, the hulls of French ships were old and repairs consumed a large slice of naval appropriations. The most modern capital ships in the French navy in 1910, the *Republique* and *Justice* were no better than the German *Braunschweig* of 1902. Even French torpedo boats, of the 350-ton *Poignard* and 450-ton *Spahi* types, were outclassed by German vessels of the same category.

The determined effort made in the next six years to redress the naval balance gave France seven new battleships, the four *Courhets* and three *Provences*, shortly after the outbreak of hostilities. The French were also ready with a numerous flotilla of excellent 800-ton destroyers of the *Bouclier* type. However,

the enormous strain of the western front forced France to suspend naval construction almost entirely. Consequently, the French fleet, which played a major part in the anti-submarine campaign, the attempt to force the Dardanelles and other important actions, suffered a large decline in net tonnage between 1914 and 1918. Net losses (excess of total losses over new construction) were 16 battleships, 16 cruisers, 30 destroyers and torpedo boats and 39 submarines, a total drop of 226,000 tons. In 1914, the French fleet aggregated 37 per cent of the British and 93 per cent of the American; in 1919, it was only 23 per cent of the British and 57 per cent of the U. S. Moreover, all its major units except the *Provences* and *Courbets*, which were pre-Jutland designs and therefore obsolescent, were completely worn out.

Shortly after signature of the Washington Treaty, which France signed with reluctance born of anger at Britain over certain provisions of the Versailles Treaty, the position of the French fleet was re-examined and its entire reconstruction undertaken. France set equality with Italy as her standard in order to guarantee communications across the Mediterranean between Marseilles and French North Africa. North African resources and manpower had proved of crucial importance in the World War. Access to them was accordingly chosen as the first object of French naval strategy. This dictated construction of a large submarine fleet, a string of Mediterranean air and naval bases and the development of powerful, heavy destroyers — the famous 2,000-ton and up French "cruiserettes." This program was followed until the 'thirties when France found herself with no vessels capable of out-gunning and out-speeding Germany's newly constructed "pocket battleships." To deal with this challenge of the "disarmed" Reich, France built the *Dunkergue* and *Strasbourg* (1936). Construction of full-size capital ships of the *Richelieu* class was initiated only when Italy began building her 35,000-ton *Vittorio Veneto*.

At the time of the collapse in 1940, the French fleet numbered eight capital ships (three modern), one aircraft carrier, 19 cruisers (almost all modern), about 70 destroyers (many of the heaviest type) and nearly 80 submarines. Two battleships, *Paris* and *Courbet*, were in British ports; another, *Lorraine*, and attendant cruisers, at Alexandria. *Bretagne*, *Provence*, *Dunkerque*, *Strasbourg* and many smaller craft were at Mers-el-Kebir, Algeria. *Richelieu*, ready for commissioning, had just been taken to Dakar. The carrier, *Béarn*, was at Martinique.

Gen. de Gaulle's call of July 1, 1940, was answered at first by very few vessels. The bulk of the navy's officers, perhaps convinced that Britain had already lost the war, remained mistakenly loyal to such figures as Adm. Darlan and the Vichy government. The tragic shelling of the battleships at Mers-el-Kebir on July 5 by the British western Mediterranean squadron was a direct consequence. So also were the British motor torpedo boat raid of July 8 on Dakar, in which *Richelieu* was disabled by depth charges, and the "mass suicide" of the French fleet at Toulon, its greatest base, on Nov. 27, 1942.

The only major unit permanently lost in the Mers-el-Kebir action was *Provence*. *Strasbourg* escaped immediately; *Bretagne* and *Dunkerque* were

eventually able to make their way to Toulon for refit. They were at Toulon, along with seven cruisers, the seaplane tender *Commandant Teste*, about 25 destroyers, some 23 submarines and a number of auxiliaries including the demilitarized battleship *L'Ocean*, when Anglo-American forces landed in North Africa. The following week, Germany decided to extend her occupation to all of France, including Toulon. When a German armored unit moved to occupy the naval port and dockyard at Toulon early on the morning of Nov. 27, nearly all the vessels present were scuttled. Four submarines escaped (of which one was interned in Barcelona); two *La Gallissoniere* class cruisers, two *Tigre* class destroyers, an *Aigle* or *Guepard* class destroyer, two *Le Hardis*, one *Simoun*, two *Arras* sloops and *L'Ocean* were undamaged. Few are permanently lost, but they are still on the bottom and will doubtless remain there for some years to come.

The first contingents of the naval forces of Free France were recruited at a mass meeting in a theater in London, attended by 300 determined anti-Nazi sailors. Today, the navy of the Committee of National Liberation has a total personnel of 53,000 and a fleet aggregating 300,000 tons, half the tonnage of the pre-war French fleet. Most Free French vessels, furthermore, are French in construction. The first vessel to run up the Cross of Lorraine was the submarine *Narval*, since lost. Others, chiefly French vessels in British ports, were soon acquired, although in some cases (such as the *Surcouf*, world's largest submarine, also since lost) pro-Vichy officers had to be removed forcibly by British authorities — in the desperate summer of 1940, Britain was in no mood to be denied the use of valued men-of-war by a handful of stubborn fascists. The next great accretions to Free French naval strength followed the invasion of North Africa. A number of salvable vessels were taken in Casablanca. A substantial detachment including *Richelieu* came over with the adhesion of French West Africa and were turned over to the united Free French movement finally established in 1943 in Algiers. The vessels at Alexandria also joined the pro-Allied French in the summer of 1943 as a result of an agreement between the British Foreign Office and their commander, Adm. Godfrey. Finally, American pressure brought in *Béarn* and the vessels at Martinique.

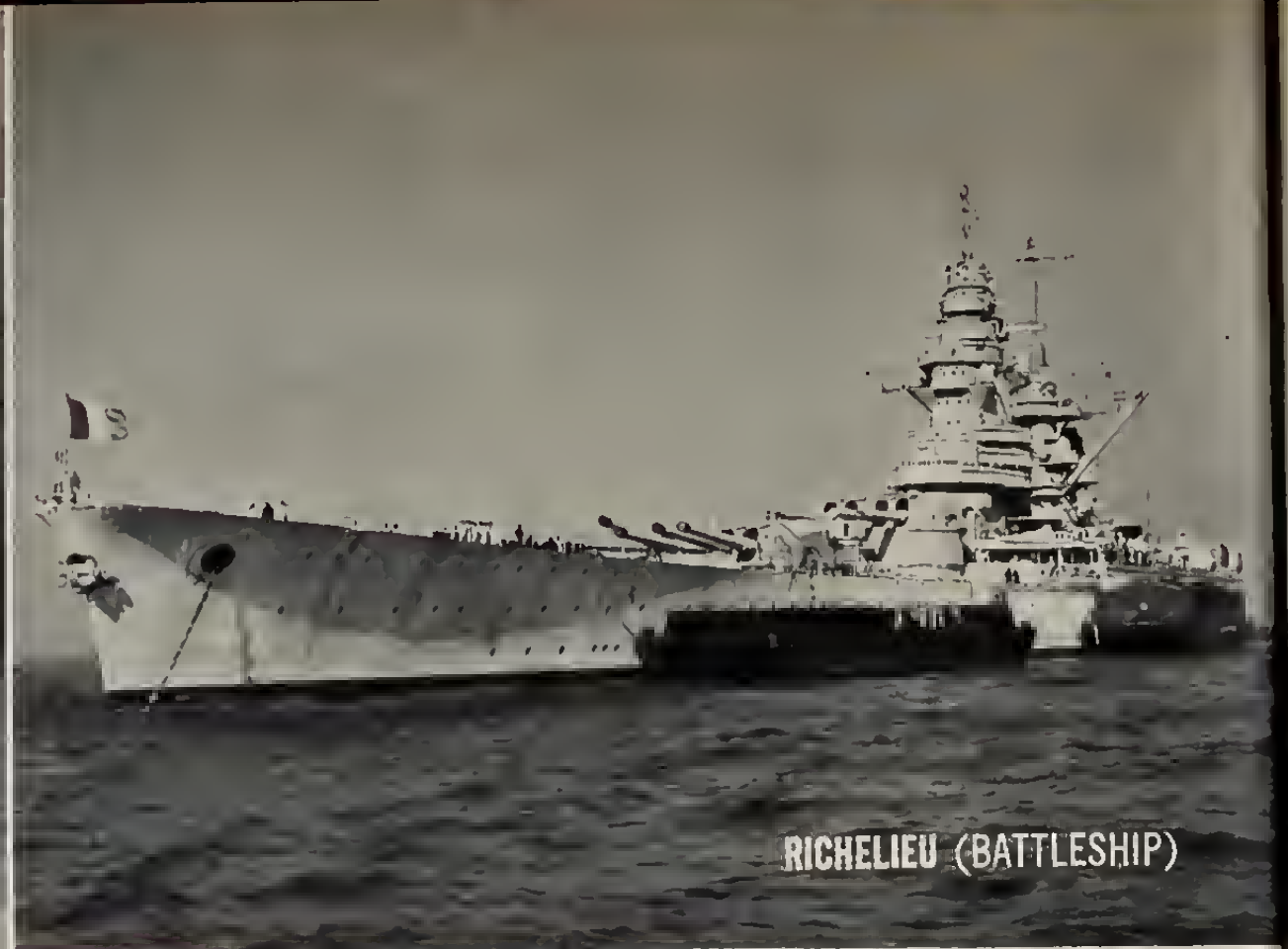
To one Free French vessel, the British-built corvette *Aconit*, belongs the distinction of having performed one of the outstanding anti-submarine exploits of the war. In a wild 1943 North Atlantic gale, cockleshell *Aconit* successively gun-duelled and sank two U-boats, meanwhile rescuing the crew of a British destroyer which had been damaged in ramming the first submarine and was sunk by torpedoes of the second.

The navy is one of the regular departments of Gen. de Gaulle's committee cabinet, and is headed by a commissioner of marine, a post held at the beginning of 1944 by Louis Jacquinot. Chief of staff of all Fighting French naval forces and commander is Adm. Andre Lemonnier; chief of staff for forces in North and French West Africa, Vice-Adm. Louis Edmond Collinet; naval forces elsewhere, Vice Adm. Philip Auboyneau; and chief of naval mission to the United States, Vice Adm. Raymond Fenard.

FRANCE



RICHELIEU (BATTLESHIP)



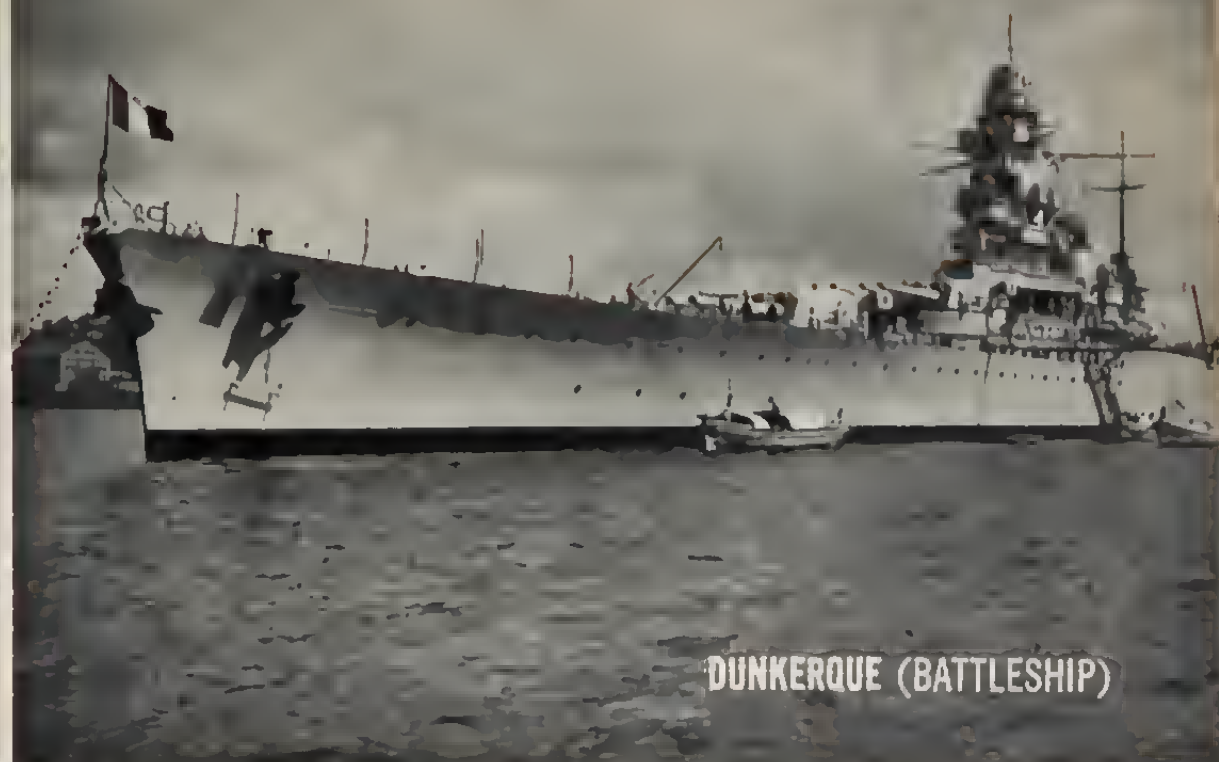
RICHELIEU (BATTLESHIP)



DUNKERQUE (BATTLESHIP)



LORRAINE (BATTLESHIP)



DUNKERQUE (BATTLESHIP)



COURBET (BATTLESHIP)



PROVENCE (BATTLESHIP)



BEAR (AIRCRAFT CARRIER)



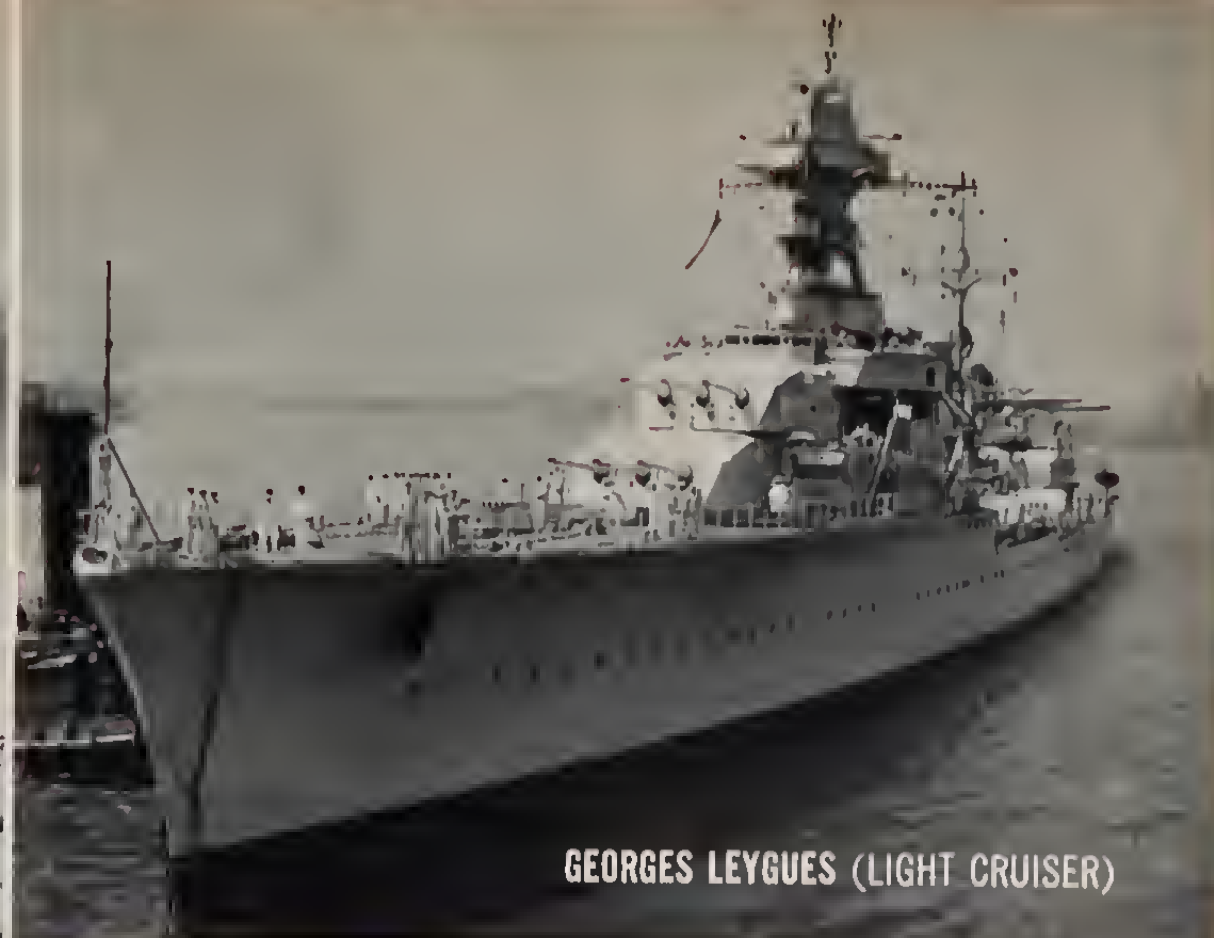
COLBERT (HEAVY CRUISER)



ALGERIE (HEAVY CRUISER)



NASHVILLE (HEAVY CRUISER)



GEORGES LEYGUES (LIGHT CRUISER)



MARSEILLAISE (LIGHT CRUISER)



LE TRIOMPHANT (DESTROYER)



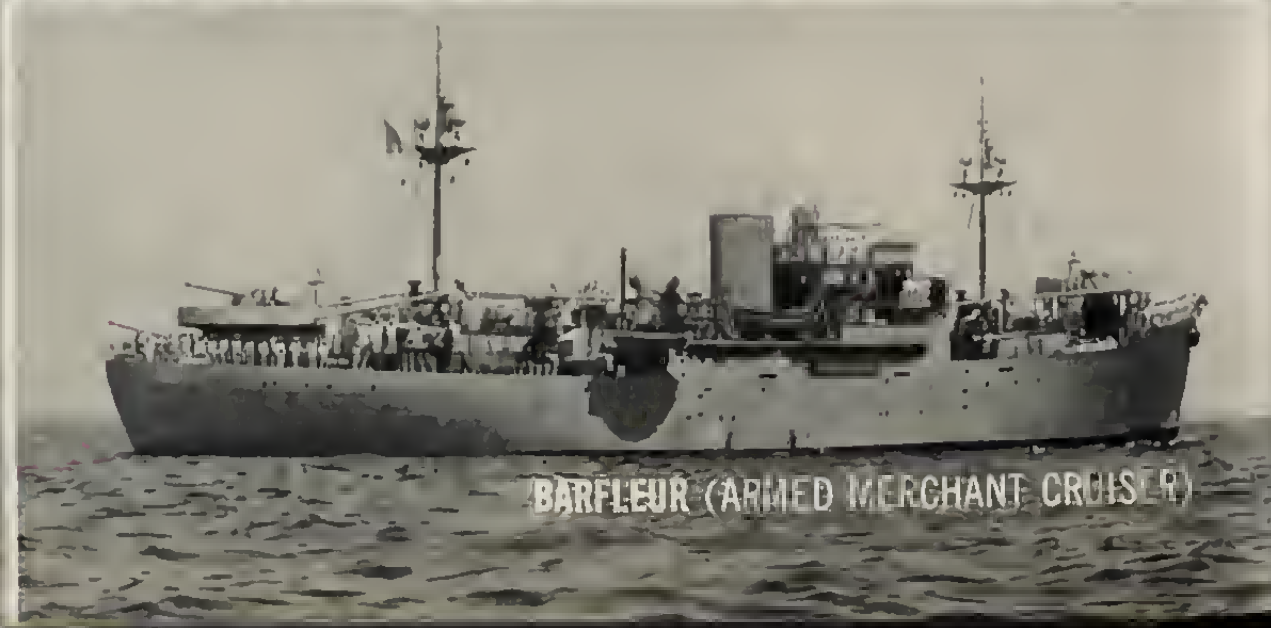
VAUBAN (DESTROYER)



DUCLOUX (ARMED MERCHANT CRUISER)



POMONE CLASS TORPEDO BOAT



BARFLEUR (ARMED MERCHANT CRUISER)



YAGOU (DESTROYER)



DUGUAY-TRUIN (LIGHT CRUISER)



CHEPARD (CLASS DESTROYER)



LE FANTASQUE (DESTROYER)





HENRI POINCARE (SUBMARINE)



BELLE POULE (TRAINING SHIP)



D'ENTRECASTEAUX (SLOOP)



TRAINING SHIP

I T A L Y

SINCE THE FALL of 1943, when her fleet surrendered off Tunisia, Italy has had no operating navy. At this writing the Italian fleet is still in existence, is still Italian-manned, but is under direct Anglo-American control. Nevertheless, its return to an Italian government after the war is not unlikely.

The present war is the third in succession in which the Italian Navy has performed in a manner which has made her courage the butt of some jokes. Italy's poor record is due, however, to consistent attempts to build a naval establishment out of proportion to real Italian resources. Consequently, even quite small losses, such as the three heavy cruisers at Matapan, could not be made good and every reverse became a disaster from which there was no recovery. Italy is seventh in population among industrial and colonial powers, and still lower in production of iron ore, coal and oil. To carry the burden of the fifth largest navy in the world and a large army, she required unusually gifted leaders or a genuine cause — two points on which the Fascist brigandage could not qualify.

Although Italy has an ancient naval tradition, Rome and the city states of Venice and Genoa leading sea powers in their days, the present Italian navy is less than four generations old. Its progenitor was the navy of Sardinia, the state which fostered the unification of Italy. The Sardinian navy simply changed its name when enough of the petty Italian states had joined Sardinia to permit proclamation of the Kingdom of Italy.

In 1866, the new kingdom joined Prussia in war upon Austria to "redeem" Venice and the province of Venetia from Austrian rule. It was well that Italian statesmen had chosen an ally able to defeat Austria quickly and gain their mutual end in that way, for their own generals and admirals did badly. One of the latter, with 22 wooden and nine iron vessels, was crushed July 7, 1866, by a force of one wooden and seven iron Austrians under Admiral Tegethoff in the Battle of Lissa. This battle grew out of an Italian attack on the Austrian island in the Adriatic and was the first encounter between squadrons of iron warships. Just before the action began, the Italian commander, Admiral Persano, decided to shift his flag. The transfer slowed down the two vessels involved and broke up the long single line in which Persano had formed his ships. Admiral Tegethoff's compactly disposed squadron was able to defeat the Italians in detail.

The process of unifying Italy was completed in 1870. At that time, the Italian fleet was in extremely poor condition, partly because nothing had been done to repair the damage of Lissa and partly because these were years of extremely rapid advance in warship building throughout the world. Five years of inactivity could effectively make a whole navy obsolete. Accordingly, systematic reconstruction of the Italian fleet was begun in 1873.

The reconstruction program, which was laid down by Admiral St. Bon, modern Italy's greatest naval figure, was at first aimed exclusively at Austria, which still held Trieste, the Trentino and other Italian territory. Later, during

the nominal Italian alliance with Austria and Germany (1882-1915) which resulted from competition over North Africa, Roman navalism was directed at France as well. The double rivalry was actually more than Italy could bear. Compounded by heavy expenditures on needed internal construction, including railroad construction for Southern Italy in 1870, and maintenance of a large army, it kept the Italian government in continual financial difficulties. However, by compelling Italy to make the most of the least, it led to growth of an advanced school of Italian naval design.

In 1901, Italy laid down two battleships carrying two 12- and twelve 8-inch guns, as heavy armament as was carried by any contemporary. Two years later, after H. C. Poundstone of the U. S. Navy had conceived the all-big-gun ship but before his revolutionary idea had been published, Gen. Cuniberti of the Italian Admiralty drew up plans for a capital ship mounting twelve 12-inch guns. Italy was without funds to lay her down until 1909, but she was a better ship than Britain's *Dreadnought* of 1906, the first giant man-o-war actually completed. Moreover, the Italian vessel, named *Dante Alighieri*, mounted her guns in triple turrets, which we were not to use on battleships until the *Nevada* and *Oklahoma*, laid down in 1912.

Italy went to war with Turkey in 1911 to seize Libya. The Italo-Turkish conflict, a one-sided affair ended in a few months, gave the Italian navy no real opportunity to learn sea warfare. The only naval actions were a few torpedo boat encounters. Routine of the peacetime expansion program was in no way affected.

By dint of great effort, when the alliance with Germany and Austria was finally abandoned and Italy entered the World War on the side of the Allies, the Italian navy had an appreciable superiority over the Austro-Hungarian. It had a 23 to 20 edge in battleships, 29 to 7 advantage in cruisers, boasted 93 destroyers and torpedo boats to Austria's 87, and three times as many submarines, 21 to 7. The margin was fortunate, for the Italian fleet was again ineptly handled. Five battleships were lost before the end of 1916 in bombardment of enemy coastal positions and similar operations, while the Austrians were losing none. Italy was left with hardly enough strength to accomplish her primary naval mission, keeping the Austrians inside the Adriatic.

In order to prevent further losses, the Italian high command from the beginning of 1917 confined its battle squadrons to a passive role. However, a search was undertaken for other means of carrying naval war to the enemy and, incidentally, of chipping away at the ships of the Austrian line. The result was the historic development of the motor torpedo boat. The first MTBs were modifications of motorboats Italy had begun developing early in 1917 for anti-submarine patrol in the Adriatic. This accounts for the M.A.S. designation of Italian MTBs—*motoscafi antisommergibili*. The first MTBs were quite slow, but by the end of the war had been brought to a relatively high state of development, with such

special features as silent auxiliary electric motors for slipping quietly into enemy harbors. Lacking efficient gasoline motors, the Austrians were never able to match the MAS craft. About 400 were placed in service, and their accomplishments were many and varied, partly because of surprise and partly because they were frequently handled with great daring. Two battleships and a coast defense vessel, the latter sunk in Trieste harbor, were among their victims. More would have been sunk, except that Italian torpedoes, frequently defective, misfired more often than not. (At that time—typical of the difficulties experienced in modern warfare by such partly industrialized countries—Italy was unable to manufacture reliable torpedoes).

The World War eliminated Austria as a power of the first rank and returned to Italy all Austrian-held Italian territory. Italy was nevertheless disappointed in her gains at Versailles. This disappointment soon turned to resentment against her former allies, which helped make Mussolini dictator and contributed to Italy's launch of one of the first postwar naval construction programs.

Although Mussolini uttered bombastic anti-British threats as often as anti-French, the Italian new shipbuilding program, which was begun in the late 'twenties, was directed solely against France. It must be conceded that it was soundly conceived. The failure of 1940-43 was not caused by want of the proper vessels. The Fascist navy was built to strike in coordination with land-based planes against France's weakest point, her dependence upon men and material from French North Africa.

Perhaps because Italy was again seeking the most for the least—the world was not to learn that airpower is quite expensive for another fifteen years—she assumed early not only that planes would play a leading role in the next war but that craft based in Italy, Sicily and Sardinia would be able to hack at the sea lanes from Africa to Marseille. Hence, no aircraft carriers were built. Italy was not wrong; she has missed carriers only in certain parts of the eastern Mediterranean. But at that time she did not seriously expect to go to war with Great Britain, her only possible first class eastern Mediterranean enemy. Italy likewise assumed that planes would play a major part in the French defense of the Marseille-Africa route. Surface craft were accordingly designed especially for night operation. At night, action is generally at ranges so close that speed is a better protection than armor, hence the well known light armor and great speed of most Italian cruisers. The prime weapon after dark is the torpedo. Torpedo tubes therefore, feature the armament of all modern Italian combatant vessels, including heavy cruisers, in contrast to the practice of such navies as the U. S., which invariably omit them from heavy cruisers and sometimes from light. The war, of course, has borne out Italian judgment perfectly on these points. Half of the surface fleet engagements that have taken place, in the Mediterranean and out, have been wild close-in night melees. The Italians also installed heavy anti-aircraft batteries and cleaned their ships' upperworks for free AA fire long before any other navy.

Italy gave great attention to submarine design too. Her U-boats are uniformly well drawn. In this field, Italy has been singularly responsible for many

innovations. One is the midget submarine, the sub-surface analogue of the MTB—since copied by Japan with no success and by Great Britain with great success. Another is the return to the 18-inch torpedo in the St. Bon class of submarines. The use of the small torpedo has puzzled many observers. The probable explanation is that they were intended for attacking merchant ships between France and Africa, most of which are quite small, and for whose destruction 18-inch torpedoes are ample. Thus the St. Bons can carry extra torpedoes.

Just before the war, the Italian rivalry with France produced another innovation in ship design which as yet has not been copied elsewhere but may well be. This is an oversized destroyer far larger than even the monster French Mogadors and Russian Leningrads. The latter, based in part on Italian designs, have given an excellent account of themselves in the aggressive hands of the Russians. The Italian "cruiserettes," the 3,362-ton Regolos, were built to counter the Mogadors; they are distinguished by eight 5.3-inch guns, massive torpedo batteries, and great speed. Few were completed and fewer still have seen action, but they are apparently a coming category, able to do almost everything that the British Didoes or American Juneaus—nearly twice as large—can do. The Regolos can lead destroyers, serve as AA ships or raiders and, of course, can screen against the attacks of enemy destroyers.

Italy prepared for the wrong war, probably because of political miscalculation by Mussolini. Instead of France, she had to face Britain. Her naval equipment, however, was far from ill-adapted to the struggle that did materialize. (Details will be found in the chronology section). The Italian-Allied war lasted three years, two months and twenty-four days. Marshal Badoglio surrendered Italy to Gen. Eisenhower on Sept. 3, 1943. The armistice was announced on Sept. 5. Before dawn of Sept. 8, acting under sealed orders Marshal Badoglio had sent on Sept. 4, the Italian fleet put out from La Spezia to rendezvous off Cape Bon with the British battleships *Valiant* and *Warspite* and strike their battle flags. On the way, they were attacked by swarms of German medium altitude bombers, who hit *Italia* (ex-*Littorio*) and *Roma*. The latter was blown up by a bomb (possibly of glider type) that went down her funnel and burst in her boiler room, touching off her magazines. Six destroyers and torpedo boats and "cruiserette" *Attilio Regolo* were detached to pick up survivors, whom they took to Port Mahon in the Balearics, where the vessels were interned. *Italia* and the remainder made it safely to the surrender rendezvous. In addition to the *Italia*, these units included *Vittorio Veneto*, five light cruisers and four destroyers. After the surrender they proceeded to Malta. There they found *Andrea Doria* and *Caio Duilio*, two light cruisers and a destroyer from Taranto. Three days later a fifth Italian battleship, *Giulio Cesare*, anchored at Malta, after a successful voyage from Trieste, at the head of the Adriatic. The remaining Italian battleship, damaged *Cavour*, was taken in the occupation of Taranto. About 20 submarines also put into Malta and other Allied ports during the week of September 9-16. Altogether, by the end of the month, more than 100 Italian combatant vessels, the hulk of the Fascist navy, were in Allied hands.



NEW YORK CLASS BATTLESHIP



CONTE DI CAVOUR (BATTLESHIP)



OREGON (BATTLESHIP)



EUGENIO DI SAVOIA (LIGHT CRUISER)



EUGENIO DI SAVOIA (LIGHT CRUISER)



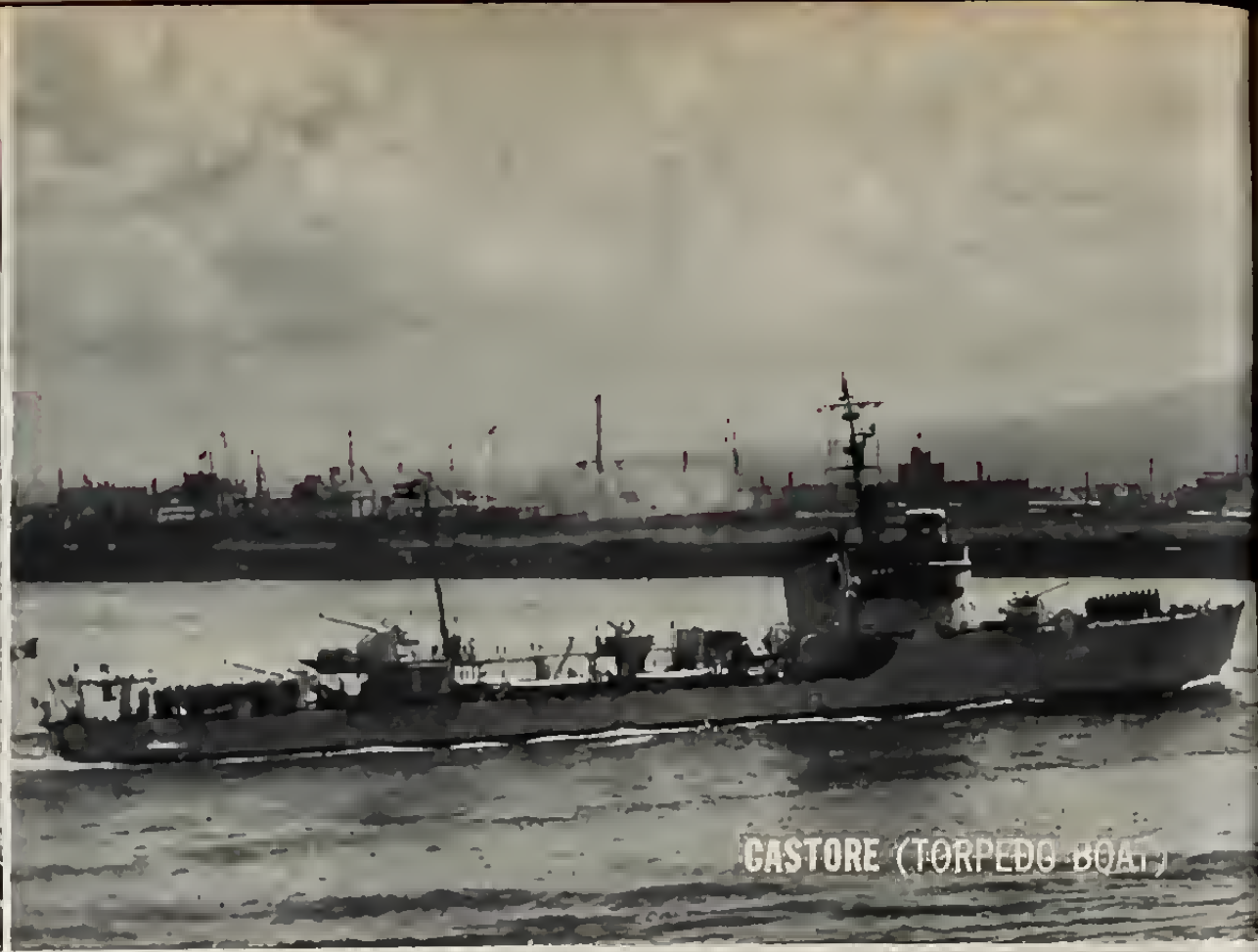
ALBANY (LIGHT CRUISER)



MUZIO ATTENDOLO (LIGHT CRUISER)



STRALE (DESTROYER)



CASTORE (TORPEDO BOAT)



ANTONIOTTO USODIMARE (DESTROYER)



LIBRA (TORPEDO BOAT)



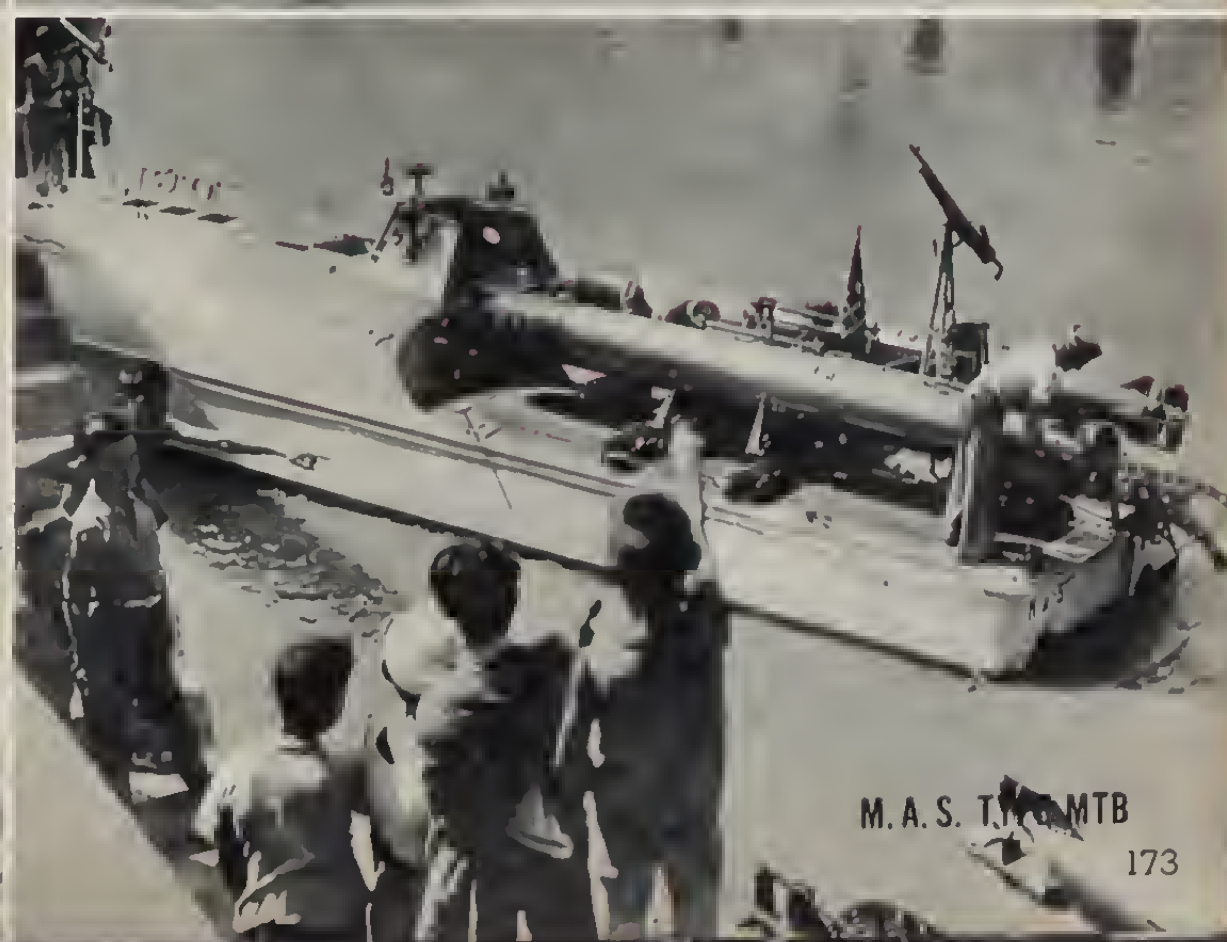
OTARIA (SUBMARINE)



BALILLA (SUBMARINE)



MOTOR TORPEDO BOAT



M.A.S. T. 173 MTB

GERMANY

FOR A WAR FLEET which has made so great a mark on our times, the German navy has a surprisingly short history — a history that covers less than a hundred years. And it has made its mark despite condescension and neglect by the land-minded Prussian Junkers.

What is now the German navy was organized as the Prussian *Kriegsmarine* shortly after 1848. Following its destruction by Napoleon forty years before, Prussia had re-emerged as the leading state of northern Germany and embarked on an aggressive policy designed to unite Germany under her Hohenzollern king. The navy, founded to gain the support of Hamburg, Bremen and other seaport cities for the Prussians' plans, became the fleet of Bismarck's North German Confederation established in 1867, and the imperial navy when the German Empire was proclaimed in 1871.

Except for an eight-year period when a ministerial job was required for a favored prince, the Prussian navy was under the war (army) ministry. The North German Confederation and German Empire had a separate admiralty, but until 1897, when Adm. von Tirpitz became minister of marine, it, too, was army-controlled, the ministership being held by a succession of generals, under whom the navy was operated with customary Prussian efficiency, but constituting so small a force that it played only a minor roll in the Danish war of 1864, the Prusso-Austrian conflict of 1866 (the Seven Weeks' War) and the Franco-Prussian war of 1870-71. It was hardly large enough to guarantee the security of German communications between the North Sea and the Baltic. A change began to take place, however, even before von Tirpitz was appointed marine minister. Unlike the army officer corps, which is dominated by the land-owning Junker squirearchy, high German naval officers come largely from the seaport commercial classes, who considered overseas colonies essential to Germany's future and advocated a strong navy. By the mid-eighties, they had gained enough influence to make a dent in the opposition of Bismarck, who was still Chancellor. Four battleships, the Reich's first large capital ships, were authorized in the building program of 1888.

In that year also, the first Wilhelm died and his grandson, who was to fight the World War, became Kaiser. Wilhelm II was strongly naval-minded. His plans for building up the High Seas Fleet were frustrated for several years, but by 1898 Bismarck was dead, a Franco-Russian alliance threatened Germany in the Baltic and Wilhelm had no difficulty in pushing through the Reichstag bills providing for a fleet of 38 battleships and proportionate numbers of other craft. This precipitated the great Anglo-German naval race, which continued, with the able assistance of professional nationalists on both sides, into the World War.

At the outbreak of the war, the German navy was the second largest afloat.

Bismarck had been right, however, and the Kaiser wrong. Germany had lost the building race, and the German fleet spent most of the war in harbor, confining itself to occasional hit-and-run raids. Its only encounter with the main British fleet, the Battle of Jutland, came about without any German intent. The British, who had come into possession of German code-books, learned from intercepted messages that a foray was planned and laid an appropriate trap. More British than German ships went to the bottom that day, May 30, 1916, but the Germans could less afford their losses. The battle confirmed the failure of the German effort on the surface of the sea and pointed straight to the surrender and scuttling of the fleet in 1918-19.

Although the High Seas Fleet was thus unable to exert any decisive influence on the course of the war, there were nevertheless several noteworthy actions involving detached units. When the war broke out, a German cruiser squadron was in the Pacific under von Spee. Von Spee attempted to reach home via Cape Horn. On the way, he overwhelmed a smaller British flotilla under Adm. Cradock off Coronel, Chile (Nov. 1, 1914). At the Falkland Islands, however, where he boldly stopped for coal, he was intercepted by a squadron of new battle cruisers hastily sent to the South Atlantic by the British Admiralty. This time it was he who was annihilated (Dec. 8, 1914). In August, 1914, the light cruisers *Emden* and *Karlsruhe* were also on distant stations. They destroyed 32 merchantmen between them before they were run down. The pursuit of the *Emden* at one time or another involved no less than 78 British cruisers. The Germans also slipped through the blockade the famed raiders *Seeadler* (Count von Luckner's ship-rigged sailing vessel), *Möwe* and *Wolf*. The armed merchant cruiser *Wolf* was never caught, successfully making her way back to Germany after an astounding voyage of fifteen months.

Under the Versailles treaty, the German fleet was limited to 100,000 tons, with no one unit exceeding 10,000; submarines were prohibited altogether. The Nazis shortly after coming to power began its re-expansion but along entirely different lines from the navy lost by the Kaiser, carefully avoiding the Kaiser's mistaken attempt to outbuild Britain in surface vessels. This program, which got the short-sighted blessing of Russia-hater Prime Minister Baldwin in the Anglo-German naval treaty of 1935, was limited to the number of ships necessary for superiority over the Russians in the Baltic plus whatever might be required for special purposes (such as occupation of Norway, contemplated by the German general staff long before Hitler). Contrary to the general impression, Hitler's navy includes no units which appear to have been specially designed as surface raiders; the "pocket battleships" would probably have been given lighter armament if such was their designers' intention.

It is a curious circumstance that the potency of Germany's most effective naval weapon in two wars, the submarine, was almost completely unforeseen

by the Kaiser's admirals. Germany did not acquire her first U-boat until 1906, when every other naval power already had at least a flotilla. A workable submarine, *Le Plongeur*, had been invented by two French engineers, Bourgeois and Brun, forty-three years before. Since 1890, France had been constructing experimental undersea craft in large numbers for defense against Britain. John Holland's *Plunger*, with its combination of internal combustion engine and battery-powered electric motor the prototype of the modern submarine, was delivered to the U. S. Navy in 1900, and in the succeeding years two series of Holland craft were built for the Royal Navy. But not until even Russia began acquiring submarines (from Krupp, no less) did von Tirpitz evince interest, and even then the German admiralty moved slowly. By July, 1914, the German undersea fleet numbered 28; the British, meanwhile, had grown to 55.

Two days after England declared war, ten of the German submarines were sent out on reconnaissance. *U-15* was rammed and sunk by the cruiser *Birmingham*, *U-13* disappeared and the other eight had nothing to report when they returned. The U-boat scored its first successes only in September. On the 5th, *U-21*, Lt. Hersing, sank the light cruiser *Pathfinder*, and on the 22nd, *U-9*, Lt. Weddigen, sank three armored cruisers, *Aboukir* and *Cressy* and *Hogue* (which had stopped to pick up survivors of the *Aboukir*) within a few hours. Now German and Briton alike were thoroughly alive to the submarine's potentialities. The first merchant ship sinking, the scuttling of the small steamer *Glitra* by *U-17* on Oct. 20, was carried out without orders. However, by the beginning of 1915, German navy leaders were ready for a systematic undersea campaign against Allied shipping. On Feb. 4, with British blockade practices furnishing an excuse, they obtained the Kaiser's signature to the historic order proclaiming a submarine counter-blockade around the British Isles.

The details of the U-boat campaigns of the last war need not concern us here. Suffice it to say that until the hydrophone and depth charge were developed (1916) and the convoy adopted (1917), Britain had no effective reply. The principal brake on the German submarine was the critical attitude of the United States, which caused the German government to place sharp restrictions on U-boat activities until Feb. 1, 1917, when it was decided to take the risk of provoking America into the war and wage an unrestricted campaign. It was believed England could be brought to her knees by this means in a few months.

In spite of the Reich's late start, the German submarine of 1914 was the best of its day. It was driven by Diesel engines much superior to the Diesels or other types of motors in use in other countries; its cruising radius was nearly double that of any of its contemporaries. The Germans were also the first to develop the submarine minelayer. Similarly, although no U-boats were built in Germany between 1919 and 1935 and only a few engineers were able to obtain experience elsewhere, the German submarine must be acknowledged the world's best.

With the possible exception of certain experimental craft, the U-boat, like all submarines now in use, is propelled by the traditional combination of Diesel and electric motors. The Diesels of U-boats built up to 1940 generally provide a top surface speed of 17 knots; those since, in excess of 20. Thus, the later

U-boats are not only faster than most merchant ships, but are faster than other submarines except larger American and Japanese types. German undersea craft are also known to possess greater range than contemporaries of the same size. Underwater performance, however, is standard, the designers evidently having decided that submerged speed of more than ten knots (which can be maintained only for a short time without compelling the submarine to surface to charge its batteries) was not worth the price that would have had to be paid in other features.

Most submarines are built with a double hull, the inner unit stressed to carry the main load of underwater pressure and the outer skin serving to break the shock of depth charge explosions. Ballast and fuel tanks are between the two hulls. This arrangement was followed by the Germans until about 1940. Since then, in the interest of quick production, they have returned to the single hull, with saddle diving ballast tanks. The single hull is more vulnerable to depth charges than the double hull even when plates are of the same total thickness. However, the plating of single-hull U-boats is heavy enough to withstand the bursting of 300-pound depth charges within 50 feet, punishment few others will absorb without crippling damage. Moreover, they have a diving limit of 500 feet or more as compared with the usual 400.

In addition to their heavy plating, current U-boats have several distinctive features. At the base of the armored conning tower, there is an ingenious watertight hatch which closes automatically in the event of damage to the tower. As traditional in German men-of-war, internal compartmentation is excellent. Anti-aircraft armament is also quite powerful, ranging up to 37 mm in caliber. Finally, 500-ton U-boats carry a 3.5-inch deck gun, and larger, a 4.1-inch. These are as heavy or heavier than are carried by any comparable craft. The deck guns of the 800-ton *U. S. S. Marlin* and *Mackerel*, the only medium-sized recent American submarines, for example, are but 3-inch.

The standard U-boat offensive armament, depending on the size of the craft, is five to eight 21-inch torpedo tubes, four in the bow and the remainder astern. In some vessels, the bow tubes are so arranged that, when fired in salvo, the torpedoes fan out instead of running on parallel courses, making it more difficult to dodge them by maneuvering. Torpedoes are stowed internally, extras on deck (which requires special handling machinery, of course). Thus German undersea craft carry at least three torpedoes for each tube in place of the usual one-in-the-tube and one spare. Both the standard torpedo and a new electric wakeless model are employed. Hydrophones of the usual type are a general item of equipment, permitting torpedoes to be aimed, though not as accurately, without showing a periscope. Periscope lenses and prisms are of a special non-reflecting glass, which transmits light better than ordinary optical glass and so improves bad weather, dawn-and-dusk and night vision.

German "wolfpack" operations suggest possibility of communication means between submerged vessels exceeding the limits of underwater sound projection, the precise nature of the method employed, however, may not be disclosed until ultimate destruction of the Nazi war machine is effected.

GERMANY



GNEISENAU (BATTLESHIP)



GNEISENAU (BATTLESHIP)



GNEISENAU (BATTLESHIP)



TIRPITZ (BATTLESHIP)





GRAF ZEPPELIN (AIRCRAFT CARRIER)



ADMIRAL BATTENBERG HEAVY CRUISER



ADMIRAL HIPPER HEAVY CRUISER



LEIPZIG (LIGHT CRUISER)



LEIPZIG (LIGHT CRUISER)



EMDEN (LIGHT CRUISER)



NÜRNBERG (LIGHT CRUISER)



SCHLESSEN (TRAINING VESSEL)



ILFIS (TORPEDO BOAT)



GODEL (TORPEDO BOAT)



TORPEDO BOAT



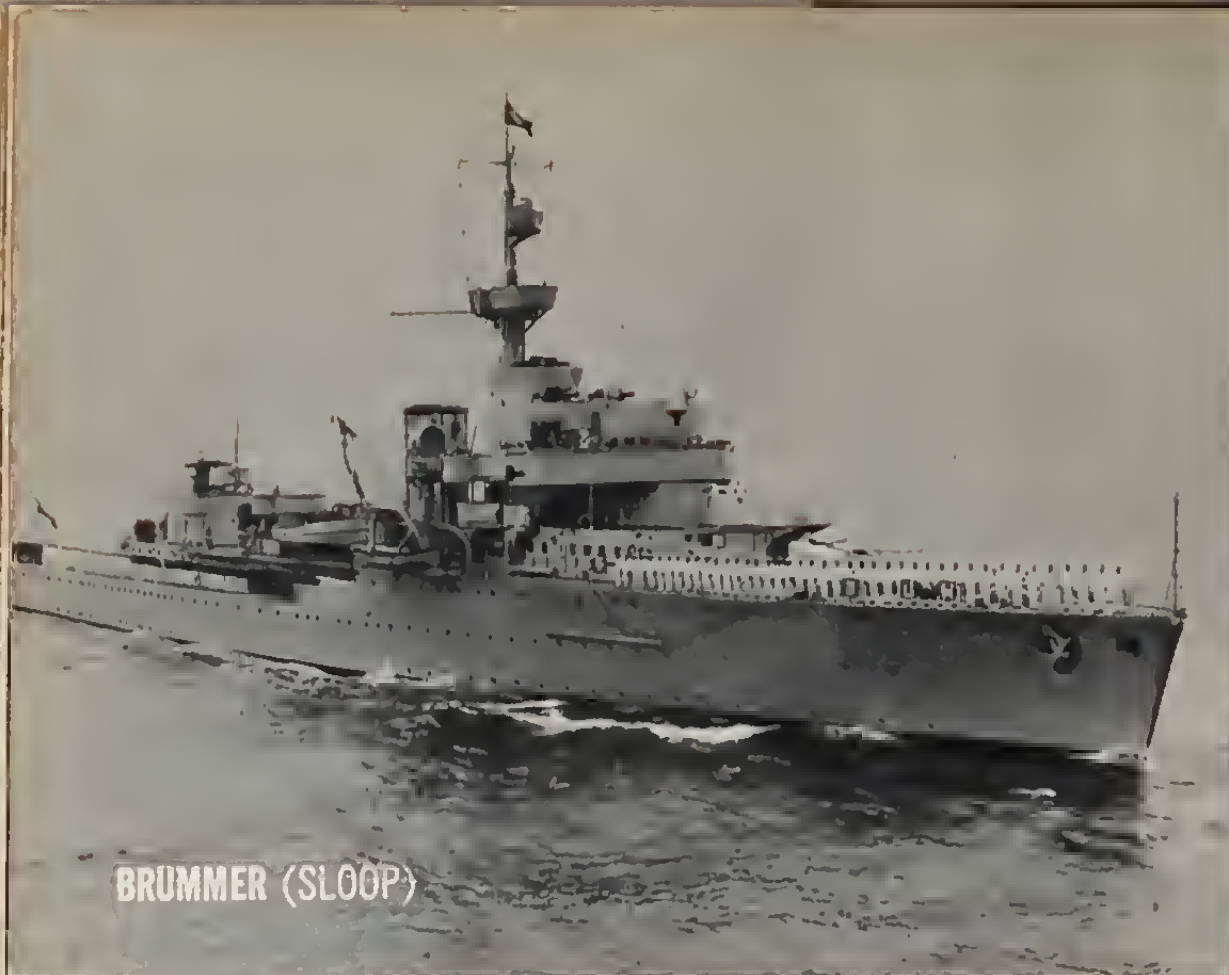
SMALL TRAINING SUBMARINES



U-14 (SUBMARINE)



U-18 (SUBMARINE)



BRUMMER (SLOOP)



COAST PATROL BOAT



THE GUNNERS



BLITZ (TARGET SERVICE SHIP)

J A P A N

IT is a common belief that Japan's military aggressiveness is the result of recurrent warfare with her neighbors. Actually the Japanese acquired the chip on their national shoulder by warfare among themselves. Up to 1867-8, when the central government was consolidated, Japanese history is compounded largely of interminable wars among the clans and noble families which still play a prominent part in Japanese life.

Most of the civil wars took place within the limits of Honshu, the main Japanese island. Consequently, naval action, such as the defeat of the Taira clan by Yoshitsune in the great battle of Dan-no-ura in 1185, was seldom involved. External threats, however, occasionally succeeded in uniting the nation and foreign wars followed.

Japan discovered the western world and vice versa in 1542, when a Portuguese ship, driven off its course by a storm, grounded on a small island just south of Kyushu. The Portuguese were well received and in the next years Japan was visited by several Portuguese traders. They were followed by missionaries in 1549 and in 1567 a shrewd minor noble, Sumitada, became a Christian, built a church, obtained a near-corner on foreign trade and saw an obscure fishing village on his domain become in five years the great port of Nagasaki. Within another twenty years, the rulers of Japan, frightened by Spanish conquest of the Philippines, began to turn against Christianity and foreigners. The trend culminated in the ouster of foreign missionaries in 1616, expulsion of the Spanish traders in 1624 and Portuguese in 1638 (after a revolt by Japanese Christians in 1637 which had its chief cause in high taxes but was blamed on the Portuguese) and the celebrated edict of 1636 forbidding Japanese to build ocean-going vessels. The only foreign traders permitted were a few Dutch cooped up on a 250-yard-square man-made island, Deshima, in Nagasaki harbor who were allowed to bring in a single ship a year.

The Japanese held to their exclusion policy for over 200 years in spite of frequent attempts, especially by the English and Russians, to secure its modification. Soon after 1840, however, it began to break down. In 1846, the U. S. sent Commodore James Biddle with two ships to Uraga to secure guarantees of hospitality for shipwrecked American whalers. He failed, but in 1853 Commodore Matthew Calbraith Perry steamed into Tokyo Bay with *U.S.S. Mississippi*, *Plymouth*, *Saratoga* and *Susquehanna*. Commodore Perry placed a demand for a treaty of commerce before the Japanese and sailed away to China. He got it when he returned early in 1854 with ten men-of-war. Meanwhile, the ban on constructing ocean ships had been dropped in 1848.

Commodore Perry was followed by plenipotentiaries from other countries, who likewise obtained treaties, for the Japanese government suddenly became aware that Japan was weak. Exclusion, however, did not die peacefully. In 1862, a mob killed two English legation sentries and a third Briton was cut down on

a highway by the retinue of the powerful Satsuma clan head. The British bombarded Kagoshima, the Satsuma clan's headquarters, the next year when the prince of Satsuma refused to make amends. Another clan chieftain, the Daimyo of Choshu, shortly afterward attacked American, Dutch and French vessels, as well as Japanese (he was in rebellion against the central government), passing through the Strait of Shimonoseki. Consequently, an Anglo-Dutch-French fleet shelled and partly destroyed Shimonoseki in 1864.

At that time, the chief political figure in Japan was the Shogun or "generalissimo-of-empire." Authority of the Shogunate, a hereditary office held for the previous two centuries by members of the Tokugawa clan, was seldom accepted willingly by rival clans. In 1867, therefore, to unify the country in the face of what seemed a foreign threat, the Tokugawa Shogun took the occasion of the ascent of a new emperor, Mutsuhito (who adopted the name Meiji), to surrender his authority to the throne. This is the so-called Meiji Restoration, from which the modern Japanese government dates, although its power was not consolidated until 1877 with the defeat of an insurrection by the Satsumas.

The new Japanese government — which was not run by the emperor, as Japanese myth has it, but by an informal council of clan chiefs — immediately undertook the country's modernization. A feature of its program was establishment of an imperial navy, formed by grouping ships belonging to the different clans. As the Satsumas had had the most vessels, the new navy was largely their work and is under their control to this day, notwithstanding the 1877 rebellion.

The Japanese built their navy on the best model to be found, the British. English officers were imported as instructors and an endless stream of cadets (including the future Adm. Togo) sent to England. Vessels of the latest types were systematically purchased abroad, generally from English shipyards, and construction of smaller types was begun at home. As a consequence of these efforts, by 1894, when modern Japan fought her first war, she had a fleet of 52 up-to-date vessels (including 24 torpedo boats) aggregating 50,000 tons.

The Sino-Japanese war of 1894-5 arose from a renewal of Japanese ambitions in Korea. In 1894, the Chinese, of whom the Koreans were feudatory vassals, sent a small force to Seoul to suppress a rising against the Korean government. The rebellion died down and Japan informed China that further dispatch troops would be regarded as an unfriendly act. More were in fact sent, encountering the Japanese cruiser *Naniwa* en route. *Naniwa* promptly sank their transports, precipitating war between the two powers. In the ensuing campaign, the Japanese followed Hideyoshi's practice of not waiting for defeat of the enemy fleet before beginning overseas land operations. Accordingly, a surprisingly efficient Japanese army had already driven the Chinese from Korea when the Japanese met the Chinese fleet, then of approximately equal strength.

Unlike the sequence of events in Hideyoshi's time, however, the result, in the Battle of the Yalu, Sept. 17, 1894, was a decisive victory for the Japanese. The Chinese vessels, which had a number of English among their officers, were annihilated by better Japanese discipline and gunnery. The remainder of the Chinese fleet was blockaded in Weihaiwei, a Shantung port, whose surrender was compelled by joint army-navy action a few months later. The Japanese army meanwhile also seized Port Arthur and Dairen in Manchuria.

The Treaty of Shimonoseki (1895) ceded Formosa and Manchuria to Japan and recognized the independence of Korea. A joint demarche by Russia, Germany and France however forced the Japanese to give up Manchuria. Russia and Japan clashed again and again in the next few years over southern Manchuria, which Russia occupied in 1899 under the pretext of using Port Arthur as an embarkation point for Russian troops bound for Tientsin to participate (along with Japanese and other contingents) in suppressing the Boxer uprising in China. Japan finally severed relations with Russia Feb. 4, 1904, and four days later the Japanese fleet under Adm. Togo made a surprise night torpedo attack on the Russian squadron at Port Arthur.

In the ten years since 1894 the Japanese had materially strengthened their fleet. Purchases abroad and further expansion of the home construction program brought it in 1904 to a total of 78 ships and 257,000 tons. The Japanese, moreover, were secured against interference of other powers by the Anglo-Japanese treaty of 1902, which England had signed when it became necessary to find naval counterweights to the emergence of Germany as a leading European sea power.

The Japanese torpedo attack disabled three Russian men-of-war, a battleship and two cruisers, and reduced the Port Arthur squadron, largest Russian naval force in the Far East, to a position of inferiority to Adm. Togo's six battleships. The Russians were further weakened when their one able commander, Adm. Makaroff, was lost with the battleship *Petropavlovsk*, sunk by a mine during a foray April 14. However, Togo lost two battleships, *Hatuse* and *Yasima*, to mines May 15, and on Aug. 10, Makaroff's successor, Adm. Vitheft, ventured to leave Port Arthur. The two fleets joined battle about noon and fought until nightfall. Although the action had not been conclusive, the Russians elected to split, a number scattering in a senseless, vain attempt to escape. The remainder returned to Port Arthur, where most were crippled by Japanese siege artillery and the others finally taken in the fall of the port (January, 1905). The only other Russian naval force in the Pacific, a Vladivostok cruiser squadron, had been defeated by Adm. Kaimura Aug. 14.

Togo's blockade and Kaimura's victory enabled the Japanese to land and continuously reinforce large armies in Manchuria. Since the Russians were dependent on the single-track trans-Siberian railway and the Czarist administration was moreover hopelessly inept and corrupt, the land campaign ended in the Japanese victory of Mukden (March, 1905). In the meantime, however, the Russian Baltic Fleet under Adm. Rodzhestvenski had been dispatched from Kronstadt to redress the naval balance. Adm. Rodzhestvenski, "reinforced"

against his will at Cam Ranh Bay, Indo-China, by a squadron of ancient crocks under Adm. Nebogatoff, reached Japanese waters in May, 1905, after a voyage replete with weird mishaps. Unhappily, lack of coal compelled him to try to run Tsushima Strait (between Japan and Korea) to reach Vladivostok. Togo was waiting for him. Adm. Rodzhestvenski's tired, miscellaneous squadron, without means of replying to after-dark Japanese torpedo attacks, was totally annihilated in a two-day running battle (May 27-8). That ended the war.

Japan entered the World War on the Allied side to strengthen her position further. The extent of her participation was fabrication of British-supplied steel into merchant ships for the Allies (for which she was handsomely paid), convoy work between Australia and Gibraltar, and seizure of the Shantung port of Tsingtao and the Carolina, Mariana, Marshall and Pelew Islands from the Germans. She also presented the Chinese with the notorious Twenty-One Demands (1915), but was compelled to drop them at Versailles. Her only important losses were two Japanese-built vessels, the old battleship *Kawachi* and battle cruiser *Tokuba*, both destroyed by internal explosions probably resulting from defective construction. She kept the islands she had taken by the simple expedient of refusing to get out.

In 1922, Japan grudgingly signed the Washington Naval Limitation Treaty, assigning her 60 per cent of the capital ship and aircraft carrier tonnage allotted to Great Britain and the U. S. She dropped her demand for parity when the U. S. and Britain agreed not to fortify any of their possessions between Pearl Harbor and Calcutta. This was not only more valuable than parity, but failure to agree would have effected an expanded U. S. naval building program, which the Japanese could not match.

Although the number of heavy units was now limited, the Japanese fleet continued to expand steadily throughout the Washington Treaty period, with emphasis on destroyer and submarine construction. When cruisers were limited by the London treaty of 1930, Japan gained a 70 per cent allotment in that category. She finally precipitated the naval race preceding the present war by denouncing naval limitation altogether (1936).

Japan renewed her career of aggression against China late in 1931 with the occupation of Manchuria. The navy has played a secondary role in the Asiatic mainland campaigns, partly by obvious reason of geography and partly because its interests were to the south, in the Philippines and Indonesia, where the oil which Japan lacked was to be found. Moreover, it was being built up for the climactic 1941-2 attacks on the U. S., Great Britain and the Netherlands Indies.

Details of Japanese naval construction have not been made public since 1936 and even those of earlier dates cannot be guaranteed. Nevertheless, the navy which Japan sent into action on Dec. 7, 1941, appears to have had the following strength: eleven battleships (plus four under construction), nine aircraft carriers (plus two or more building), 35 to 40 cruisers (plus four or more building), about 125 destroyers and torpedo boats and 80 submarines. Four battle cruisers were also reported under construction. Probably as much as half of this tonnage was gone by the beginning of 1944.

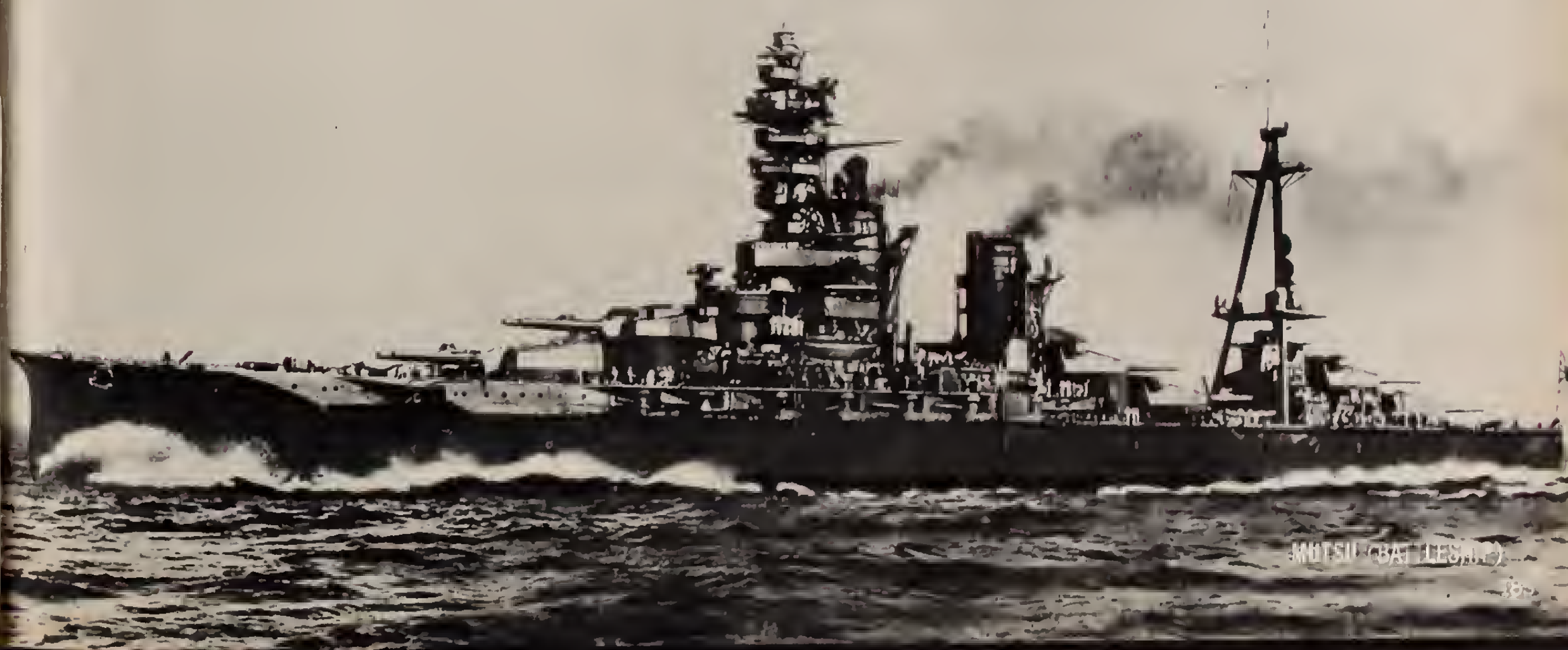


YAMASHIRO (BATTLESHIP)

JAPAN



NAGATO (BATTLESHIP)



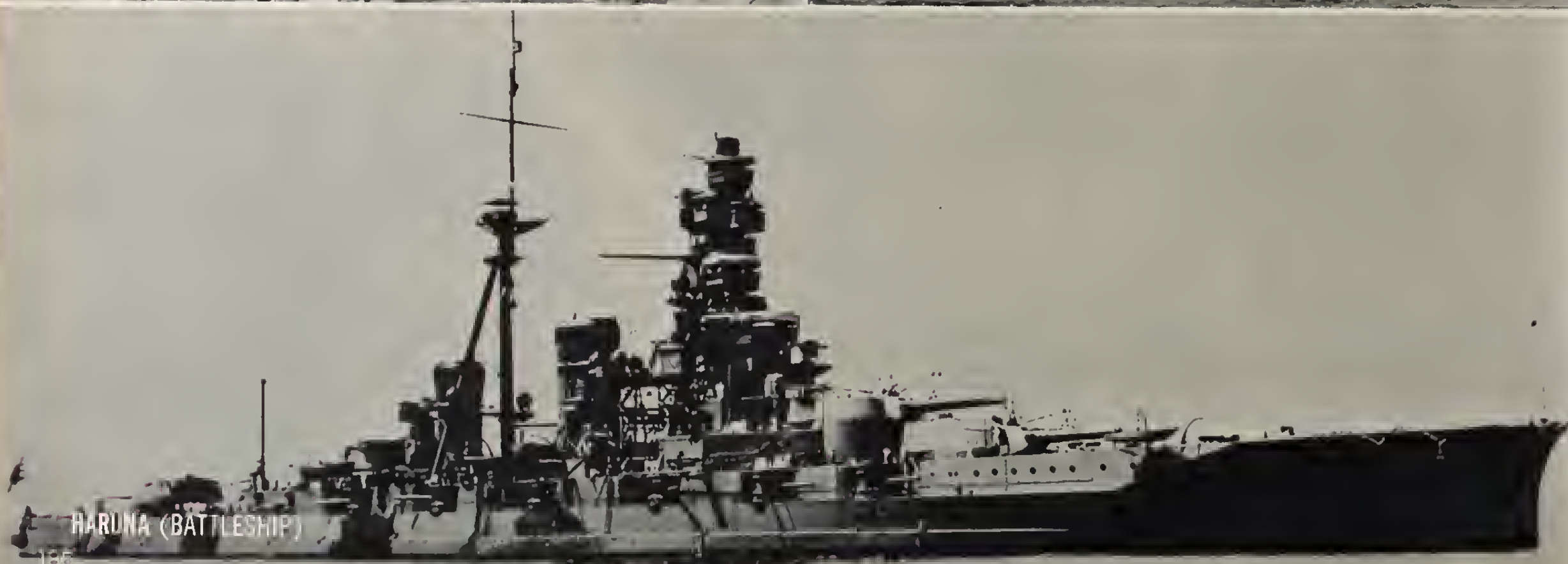
MUTSU (BATTLESHIP)



HYUGA (BATTLESHIP)



KIRISIMA (BATTLESHIP)



HARUNA (BATTLESHIP)



USS (BATTLESHIP)



KONGO (BATTLESHIP)



HUSO CLASS BATTLESHIP



HOSYO (AIRCRAFT CARRIER)



KAGA (WAR LOSS)



KAGA AND AKAGI (WAR LOSS)





NAGATO (HEAVY CRUISER)



KUMANO (LIGHT CRUISER)



ASIGARA (HEAVY CRUISER)



ASIGARA (HEAVY CRUISER)



LIGHT CRUISERS



KUREMARU (DESTROYER)



KUREMARU (DESTROYER)



KURE (LIGHT CRUISER)



KURE (HEAVY CRUISER)



KUREMARU (DESTROYER)



I-161 (SUBMARINE)



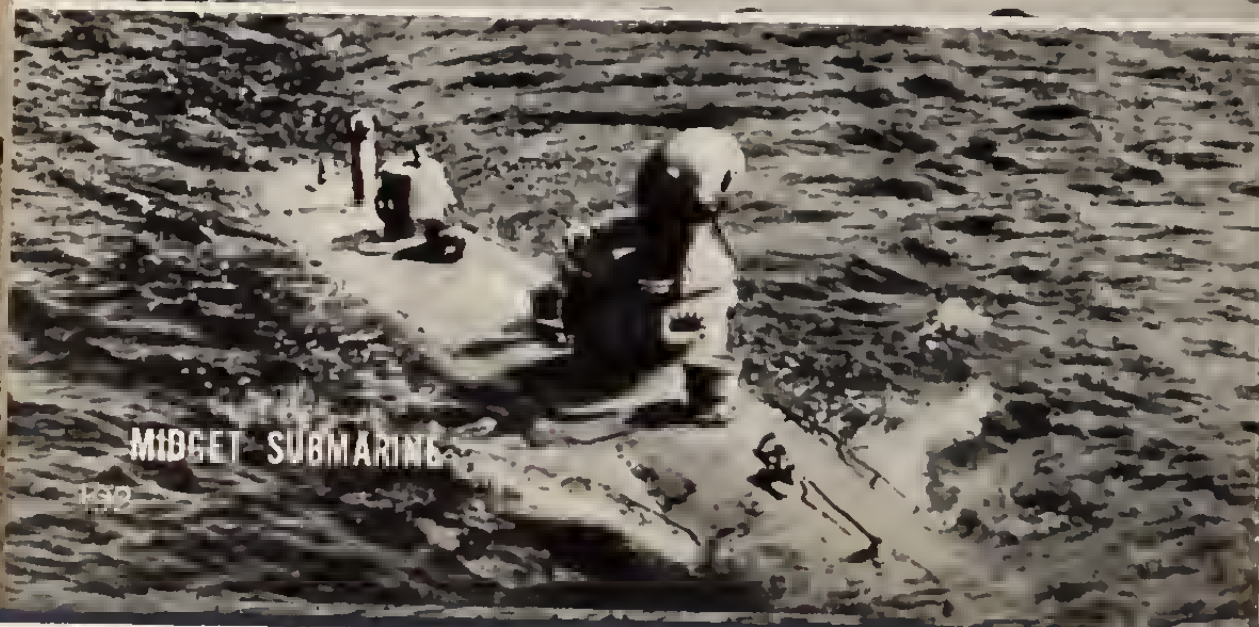
O-54 (SUBMARINE)



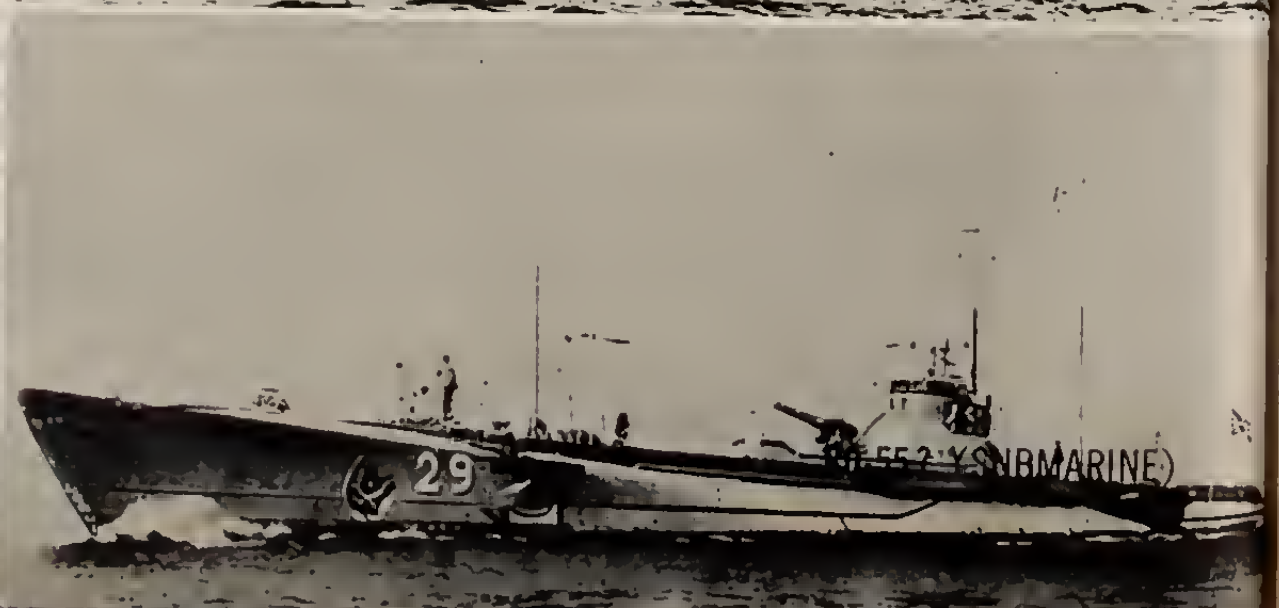
I-53 TYPE SUBMARINE



I-155 (SUBMARINE)



MIDGET SUBMARINE



I-552 TYPE SUBMARINE

DATA SECTION

In the pages which follow, the details of armor and armament given are few in comparison with earlier reference volumes. The reason is that nearly all belligerent warships have been refitted one or more times since 1939 and extensively altered as to both armor and armament. Authentic details of present equipment are seldom available.

Number of crew is also usually omitted, for the great increase in anti-aircraft batteries has resulted in large additions to crews above the war complements listed three years ago and present crew figures are, of course, restricted too. In general, a large aircraft carrier today may have more than 2500 men aboard her, a new battleship nearly 2000, an older one above 1500 (instead of 1100 to 1300), a 10,000-ton cruiser 900 to 1100 in place of 650

UNITED STATES - BATTLESHIPS

Nos. 72 to 78 — Projected

In addition to the Montanas, listed below, the Two-Ocean-Navy Law of 1940 authorizes seven battleships of great size, BB72-78 (U. S. Navy designation of battleship: BB). No further action has been taken on these, however, so far as known.

5 Montana Class

| Name | No. | Builder |
|---------------|------|------------------------|
| MONTANA | BB67 | Philadelphia Navy Yard |
| OHIO | BB68 | Philadelphia Navy Yard |
| MAINE | BB69 | New York Navy Yard |
| NEW HAMPSHIRE | BB70 | New York Navy Yard |
| LOUISIANA | BB71 | Norfolk Navy Yard |

Standard Displacement*: 58,000 tons.

Dimensions*: 903' x 120'.

Draft not reported.

Main Armament*: 9 or more 16".

The Montanas, which will be the largest men-of-war afloat, will be built in large graving docks instead of slipways and floated when nearly completed instead of launched. Owing to the length of time their construction will require, however, and the fact that they are too wide to transit the present Panama Canal locks and new locks will not be ready until 1947

to 900, a medium-sized destroyer, 150.

In the tables, AA means anti-aircraft; AC, automatic rapid-fire cannon like the famed Bofors; DCT, depth charge thrower; DP, dual purpose (surface and anti-aircraft); f, fitted as flagship; MG, machine gun; SHP, shaft horsepower (actual horsepower delivered to propeller shafts); TT, torpedo tube, and *, unofficial. Dimensions are: overall length X beam X mean draft. Where waterline length is given, it is specified w.l. and length between perpendiculars, p.p. Gun figures, as 5"/38, refer to diameter and caliber (ratio of length to diameter). In general, tonnage is standard, fuel is oil and dates in parentheses, launchings.

or later, they have been given a low priority rating. Hence, they are not likely to be far advanced. As other units of the two-ocean fleet, their speed is to exceed 32 or 33 knots.

6 Iowa Class

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|----------------|------|------------------------|-----------|----------|-------|
| IOWA (f) | BB61 | New York Navy Yard | 6/27/40 | 8/27/42 | 1943 |
| NEW JERSEY (f) | BB62 | Philadelphia Navy Yard | 9/16/40 | 12/ 7/42 | 1943 |
| MISSOURI (f) | BB63 | New York Navy Yard | 1/ 6/41 | 1/29/44 | |
| WISCONSIN (f) | BB64 | Philadelphia Navy Yard | 1/25/41 | 12/ 7/43 | |
| ILLINOIS (f) | BB65 | Philadelphia Navy Yard | | | |
| KENTUCKY (f) | BB66 | Norfolk Navy Yard | 3/ 7/42 | | |

Standard Displacement: 45,000 tons.

Dimensions: 880' x 108' x 36'.

Propulsion: Four screws, four sets high pressure, high temperature geared turbines, more than 200,000 SHP. Speed*: in excess of 30 kts.

Armament: 9 16" in triple turrets; 20 5" /38 DP in twin turrets; numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA.

The Iowas are the first American warships to surpass in size the great battleships and battle cruisers scrapped before completion by the U. S. under the Washington treaty. Navy Secretary Knox announced the Iowa's commissioning in April, 1943. The New Jersey entered service a few months later. Later sisters, however, may not be ready for some time, as other types of vessels have had higher priority since mid-1942.

4 South Dakota Class

Photo Pages 48, 58

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|-------------------|------|------------------------|-----------|----------|-------|
| SOUTH DAKOTA (f) | BB57 | New York S. B. Co. | 7/ 5/39 | 6/ 7/41 | 1942 |
| INDIANA (f) | BB58 | Newport News S. B. Co. | 11/20/39 | 11/21/41 | 1942 |
| MASSACHUSETTS (f) | BB59 | Bethlehem, Quincy | 7/20/39 | 9/23/41 | 1942 |
| ALABAMA (f) | BB60 | Norfolk Navy Yard | 2/ 1/40 | 2/16/42 | 1942 |

Standard Displacement: 35,000 tons.

Dimensions: 680' x 108' 2" x 28' 6".

Propulsion: Four screws, four sets high pressure, high temperature geared turbines, more than 115,000 SHP. Speed*: In excess of 27 kts.

Armament: 9 16" in triple turrets; 20 5"/38 DP in twin turrets; numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA.

The South Dakotas were originally sisters of the *North Carolina* and *Washington*, but, as finished, have a more compact superstructure and are shorter and slightly beamier. The *South Dakota* herself has one funnel only and externally bears a striking resemblance to the Nazi *Tirpitz* and *Bismarck*. All four have already seen extensive service. In the Battle of the Santa Cruz Islands, the *South Dakota* shot down 32 or 33 attacking planes.

2 North Carolina Class

Photo Pages 57, 59, 60

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|--------------------|------|------------------------|-----------|----------|---------|
| NORTH CAROLINA (f) | BB55 | New York Navy Yard | 10/27/37 | 6/13/40 | 4/ 9/41 |
| WASHINGTON (f) | BB56 | Philadelphia Navy Yard | 6/14/38 | 6/ 1/40 | 5/15/41 |

Standard Displacement: 35,000 tons.

Dimensions: 704' x 108' x 28' 6".

Propulsion: Four screws, four sets 600-lb., BS0° geared turbines, more than 115,000 SHP. Speed: 27 kts.

Armament: 9 16" in triple turrets; 20 5"/38 DP in twin turrets; numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA. Armor*: 16" belt, 6" upper deck, 4" lower deck. Planes: more than 3. Catapults: 2.

The *North Carolina* and *Washington* are the first modern U. S. capital ships and were originally begun as Washington treaty replacements for the *Arkansas* and *Texas*, the treaty expiring through Japanese denunciation, however, before they were actually laid down. Both had about completed trials by Pearl Harbor Sunday. As all new heavy U. S. ships, owing to frequent fleet dispersal in task forces, both are fitted as flagships. The *Washington* took part in the landing in Africa. Like later vessels, the *North Carolina* and *Washington* are 35 per cent welded to save weight.

3 Maryland Class

Photo Pages 60, 61, 64

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|-------------------|------|------------------------|-----------|----------|----------|
| COLORADO | BB45 | New York S. B. Co. | 5/29/19 | 3/22/21 | 8/30/21 |
| MARYLAND (f) | BB46 | Newport News S. B. Co. | 4/24/17 | 3/20/20 | 7/21/23 |
| WEST VIRGINIA (f) | BB48 | Newport News S. B. Co. | 4/12/20 | 11/19/21 | 12/ 1/23 |

Standard Displacement: *Colorado*, 32,500 tons; *Maryland*, 31,500; *West Virginia*, 31,800.

Dimensions: 624' x 97' 6" x 30' 6" (*Colorado*), 29' 8" (*Maryland*), 29' 11" (*West Virginia*).

Propulsion: As of 1941, four screws, four turbo-electric units, 27,300 SHP. Speed: 21 kts. Possibly re-engined since.

Armament: 8 16" in twin turrets. As of 1941, 12 5"/51, 8 5"/25 AA. Both types of 5" possibly replaced by 5"/38 DP, especially in *Maryland* and *West Virginia*. Also numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA. Armor: 14"-16" belt; 1B" turret faces; decks, totaling 6"-8". Planes: 3. Catapults: 2.

Until the *North Carolinas*, the *Marylands* were the only 16" gun U. S. ships. The *West Virginia* was crippled and the *Maryland* damaged at Pearl Harbor. The *Colorado*, normally assigned to the Pacific Fleet, was either at sea on convoy duty or in the U. S. being overhauled on Dec. 7, thus escaping the Japanese attack. The *Maryland* and *West Virginia* have both been almost completely rebuilt since and are vastly better ships. The *Colorado* may also have been modernized; all three were due for early modernization, irrespective of Pearl Harbor damage. The *Marylands* were originally identical to the *California* and *Tennessee*, except for main battery. They are the survivors of ten 16-inch-gun battleships under construction at the Armistice or begun soon after and Washington-treated out of existence. The others were six 42,300-ton *Indianas* (BB49-S4) and a sister, the *Washington* (BB47), used as a target until its destruction in 1924.

2 California Class

Photo Page 63

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|----------------|------|-----------------------|-----------|----------|---------|
| TENNESSEE | BB43 | New York Navy Yard | 5/14/17 | 4/30/19 | 6/ 3/20 |
| CALIFORNIA (f) | BB44 | Mare Island Navy Yard | 10/25/16 | 11/20/19 | B/10/21 |

Standard Displacement: *Tennessee*, 32,300 tons; *California*, 32,600. Dimensions: 624' x 97' 6" x 30' 4" (*Tennessee*), 30' 7" (*California*).

Propulsion: As of 1941, four screws, four turbo-electric units, 26,800 SHP (*Tennessee*), 28,500 (*California*). Speed: 21 kts. Possibly re-engined since.

Armament: 12 14"/50 in triple turrets; as of 1941, 12 5"/51, 8 5"/25 AA. Possibly these 5" replaced by all 5"/38 DP, especially *California*. Numerous Bofors 40 mm AC, Oerlikon 20 mm AC and other AA added. Armor: 14" belt, 18" turret faces; decks totaling 6". Planes: 3 (*Tennessee*), 4 (*California*). Catapults: 2.

The *California* was badly damaged, the *Tennessee* slightly, at Pearl Harbor. The *California* has since been virtually rebuilt. Because of the great alteration of the *California's* appearance in reconstruction (as in the case of the other rebuilt ships), changes which are unknown to the enemy, no recent photos of the *California* have been released.

3 New Mexico Class

Photo Pages 55, 56, 62

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|----------------|------|------------------------|-----------|----------|----------|
| NEW MEXICO (f) | BB40 | New York Navy Yard | 10/14/15 | 4/23/17 | 5/20/18 |
| MISSISSIPPI | BB41 | Newport News S. B. Co. | 4/ 5/15 | 1/25/17 | 12/18/17 |
| IDAHO (f) | BB42 | New York S. B. Co. | 1/20/15 | 6/30/17 | 3/24/19 |

Standard Displacement: *Mississippi*, 33,000 tons; others, 33,400. Dimensions: 624' x 106' 3" x 29' 3" (*Mississippi*), 29' 6" (others).

Propulsion: Four screws, four sets geared turbines, 32,000 SHP. Speed: 22 kts.

Armament: 12 14"/50 in triple turrets. 12 5"/51, 12 5"/25 AA. Numerous Bofors 40 mm, Oerlikon 20 mm AC, other AA recently added. Armor: 14" belt; 18" turret faces; * decks totaling 10". Planes: 3. Catapults: 2.

Until the commissioning of the *North Carolina*, the *New Mexicos*, modernized in 1930-34, when they lost their cage masts and the other hallmarks of World War I US ships, were the most up-to-date American capital ships. Ordinarily a part of the peacetime Pacific fleet, they were transferred to the Atlantic in the summer of 1941, thus missing the Pearl Harbor holocaust. The *New Mexico*, now driven by geared turbines, at first had turbo-electric drive, the first electrically driven capital ship in the world.

1 Pennsylvania Class

Photo Page 54

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|------------------|------|------------------------|-----------|----------|---------|
| PENNSYLVANIA (f) | BB38 | Newport News S. B. Co. | 10/27/13 | 3/16/15 | 6/12/18 |

Standard Displacement: 33,100 tons.

Dimensions: 608' x 106' 3" x 28'.

Propulsion: Four screws, four sets geared turbines, as of 1941, 32,000 SHP. Speed: 21 kts. Possibly since re-engined.

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Armament: 12 14"/4S in triple turrets. As of 1941, 12 S"/SI, B S"/2S AA. These S" possibly replaced by S"/38 DP. Numerous Bofors 40, Oerlikon 20 mm AC and other AA added. Armor: 14" belt, 1B" turret faces, decks totaling 6". Planes: 3. Catapults: 2.

The *Pennsylvania*, the world's first capital ship with all triple turrets, is a sister of the one U. S. battleship that was an unsalvageable loss at Pearl Harbor, the *Arizona*. The *Pennsylvania* herself, in the Pearl Harbor drydock at the time, was badly damaged. Modernized in 1929, she has once more been completely rebuilt and is now actually a better ship than she was before Dec. 7. The *Pennsylvania* has a reputation as one of the best sea boats among U. S. warships.

2 Oklahoma Class

Photo Pages 50, 52

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|----------|------|--------------------|-----------|----------|---------|
| NEVADA | BB36 | Bethlehem, Quincy | 11/ 4/12 | 7/11/14 | 3/11/18 |
| OKLAHOMA | BB37 | New York S. B. Co. | 10/26/12 | 3/23/14 | S/ 2/16 |

Standard Displacement: 29,000 tons.

Dimensions: SB3' x 107' 11" x 27' 3".

Propulsion: As of 1941, two shafts, reciprocating engines in *Oklahoma*, geared turbines in *Nevada*, 2S,000 SHP. Speed: 20.5 kts.

Armament: 10 14"/4S in two twin and two triple turrets; as of 1941, 12 S"/SI, 8 S"/2S AA. S" possibly replaced by S"/38 DP. Armor: 13.5" belt, 16" 1B" turret faces, decks totaling S". Planes: 3. Catapults: 2.

The *Oklahoma* and *Nevada* were both crippled at Pearl Harbor, the former capsizing and the latter finally being beached near the entrance to the harbor lest another bomb hit sink her and block the channel. The *Nevada* is back in service, completely rebuilt, and the *Oklahoma* is being salvaged. If the war should come to an end before her reconstruction is complete, however, it is possible that she will be scrapped. The *Oklahomas*, modernized 1927-29, were the first oil-burning U. S. capital ships. Both, however, are reputed unwieldy at low speeds.

2 Texas Class

Photo Pages 49, 51

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|--------------|------|------------------------|-----------|----------|---------|
| NEW YORK (f) | BB34 | New York Navy Yard | 9/11/11 | 10/30/12 | 4/1S/14 |
| TEXAS (f) | BB35 | Newport News S. B. Co. | 4/17/11 | S/18/12 | 3/12/14 |

Standard Displacement: 27,000 tons.

Dimensions: S73' x 106' x 26'.

Propulsion: Two shafts, reciprocating engines, 2B,100 SHP. Speed: 19 kts.

Armament: 10 14"/4S in twin turrets. As of 1941, 16 S"/SI, 8 3"/50 AA. Some or all of 3" and S" possibly replaced by S"/38 DP. Numerous Bofors 40 mm, Oerlikon 20 mm AC, other AA probably added. Armor: 12" belt, 14" turret faces, * decks more than 3". Planes: 3. Catapults: 1.

The *Texas* and *New York*, which served with the British Grand Fleet during the last war and were the nucleus of our weak Atlantic squadron in the years before this war, were originally supposed to have geared turbines. The Navy switched over to reciprocating engines when U. S. turbine makers refused to meet Navy specifications. Both ships were modernized 192S-27, being converted to oil fuel, and modernized once more in 1941, when elevation of main guns was increased from 1S° to 30°, boosting range to 2S,000 yards, and many new guns were installed.

1 Arkansas Class

Photo Page 53

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|--------------|------|-----------------|-----------|----------|---------|
| ARKANSAS (f) | BB33 | Cramp S. B. Co. | 1/2S/10 | 1/14/11 | 9/17/12 |

Standard Displacement: 26,100 tons.

Dimensions: S62' x 106' x 26'.

Propulsion: Four screws, four sets geared turbines, 2B,000 SHP. Speed: 19 kts.

Armament: 12 12"/50 in twin turrets; 16 S"/SI, B 3"/50 AA. Bofors 40 mm, Oerlikon 20 mm AC, other AA possibly added since 1941. Armor: 11" belt, 12" turret faces. Planes: 3. Catapults: 1.

The *Arkansas*, whose sister *Wyoming* was demilitarized under the terms of the Washington treaty and now serves as an AA training ship, is the last of eight 12-inch-gun U. S. dreadnoughts, once the Navy's pride. The *Arkansas* in recent years served as the third ship in the Atlantic squadron's battleship division. She was converted to oil fuel in 192S-7. Elevation of guns from 1S° to 30° carried out just before Pearl Harbor.

UNITED STATES - BATTLE CRUISERS

6 Alaska Class

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|-----------------|-----|--------------------|-----------|----------|--------|
| ALASKA (f) | CB1 | New York S. B. Co. | 12/17/41 | B/1S/43 | 1943-4 |
| GUAM (f) | CB2 | New York S. B. Co. | | 11/21/43 | |
| HAWAII (f) | CB3 | New York S. B. Co. | | | |
| PHILIPPINES (f) | CB4 | New York S. B. Co. | | | |
| PUERTO RICO (f) | CBS | New York S. B. Co. | | | |
| SAMOA (f) | CB6 | New York S. B. Co. | | | |

Standard Displacement*: About 27,000 tons.

Dimensions unreported.

Speed*: More than 30 kts. Armament*: 8 12" in twin turrets or 9 12" in triple turrets.

Although they are classed as battle cruisers (for which the Navy designation is CB), the *Alaskas* are not to be confused with World War I battle cruisers like the *Renown* or the late *Hood*. They are rather "junior battleships" similar to the late *Scharnhorst*, Nazi *Gneisenau*, the French *Dunkerque* and *Strasbourg*. The *Alaskas* are to be faster than the *North Carolina* and *Washington*, but little, if at all, speedier than the *Iowas* and *Montanas*. They were undertaken to outmatch Japan's not-yet-seen and possibly non-existent 1S,000-ton *Titibu* "pocket battleships".

UNITED STATES - CRUISERS

8 Baltimore Class

Photo Page 70

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|----------------|------|-------------------|-----------|----------|-------|
| BALTIMORE (f) | CA68 | Bethlehem, Quincy | S/26/41 | 7/28/42 | 1943 |
| BOSTON (f) | CA69 | Bethlehem, Quincy | 6/30/41 | B/26/42 | 7/43 |
| CANBERRA (f) | CA70 | Bethlehem, Quincy | 9/ 3/41 | 4/19/43 | 1943 |
| QUINCY (f) | CA71 | Bethlehem, Quincy | 10/ 9/41 | 6/26/43 | 1943 |
| ALBANY (f) | CA72 | Bethlehem, Quincy | | | |
| COLUMBUS (f) | CA73 | Bethlehem, Quincy | | | |
| DES MOINES (f) | CA74 | Bethlehem, Quincy | | | |
| ROCHESTER (f) | CA7S | Bethlehem, Quincy | | | |

Standard Displacement: 13,000 tons.

Dimensions unreported.

Propulsion: Four screws, four sets geared turbines. Speed*: 33 kts.

Armament: 9 8" in triple turrets; 12 S"/38 DP in twin turrets; 12 or more Bofors 40 mm AC AA. Numerous Oerlikon 20 mm AC and other AA. Armor*: more than S" belt. Planes: 8. Catapults: 2.

The *Canberra*, the first American warship ever named after a foreign city (the capital of Australia), is the ex-*Pittsburgh* and was named for the Australian heavy cruiser lost in the Battle of Savo Island in August, 1942. The *Quincy*, the ex-*St. Paul*, is named for an American heavy cruiser lost in that action. The *Baltimore*s are generally enlarged, better protected editions of the *Wichita*.

1 Wichita Class

Photo Page 71

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|-------------|------|------------------------|-----------|----------|---------|
| WICHITA (f) | CA45 | Philadelphia Navy Yard | 10/2B/35 | 11/16/37 | 2/16/39 |

Standard Displacement: 9,324 tons.

Dimensions: 614' x 61' 9" x 19' 10".

Propulsion: Four screws, four sets geared turbines, 100,000 SHP. Speed: 32.5 kts.

Armament: 9 B" in triple turrets; B S"/3B DP in twin turrets. Numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA probably added. Armor: 5" belt, 5"-6" turret faces, decks totaling 5". Planes: B. Catapults: 2.

The *Wichita* was begun as a ship of the *Minneapolis* type, but was finished as a Brooklyn with 8" guns. The most striking feature of the *Wichita*, first used on the Brooklyns, is its big hangar stern in place of the customary cruiser stern. This enables the *Wichita* to carry as many as eight scouting planes, although only four were customarily carried before the war. Such a great complement of planes has proved itself repeatedly in the Pacific. The *Wichita* is more than one-third welded.

4 Minneapolis Class

Photo Pages 65, 68

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|-------------------|------|------------------------|-----------|----------|---------|
| NEW ORLEANS (f) | CA32 | New York Navy Yard | 3/14/31 | 4/12/33 | 2/15/34 |
| MINNEAPOLIS (f) | CA36 | Philadelphia Navy Yard | 6/27/31 | 9/ 6/33 | 5/19/34 |
| TUSCALOOSA (f) | CA37 | New York S. B. Co. | 9/ 3/31 | 11/15/33 | B/17/34 |
| SAN FRANCISCO (f) | CA3B | Mare Island Navy Yard | 9/ 9/31 | 3/ 9/33 | 2/10/34 |

Standard Displacement: 9,975 tons (*Tuscaloosa*), 9,950 (others). Dimensions: 58B' x 61' 9" x 19' 5".

Propulsion: Four screws, four sets geared turbines, 107,000 SHP. Speed: 32.7 kts.

Armament: 9 B" in triple turrets; B 5"/25 AA, possibly replaced by 5"/38 DP, certainly supplemented by other AA during 1940-41 refits. May now have Bofors 40 mm and Oerlikon 20 mm AC AA. Armor: 5" belt, 5"-6" turret faces, decks totaling 5". Planes: 6. Catapults: 2.

The *Minneapolis*es were originally seven, but three, the *Astoria*, *Quincy* and *Vincennes* were lost in the Battle of Savo Island. Although these are known as "treaty tinclads" (armor protection having been sacrificed to keep them within the 10,000-ton cruiser limits of the Washington treaty, in force when they were built), they are well protected in comparison with other treaty cruisers. The *San Francisco* was damaged in the Battle of Guadalcanal, Nov., 1942, but is now back in service.

2 Indianapolis Class

Photo Page 66

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|------------------|------|--------------------|-----------|----------|----------|
| PORTLAND | CA33 | Bethlehem, Quincy | 2/17/30 | 5/17/32 | 2/23/33 |
| INDIANAPOLIS (f) | CA35 | New York S. B. Co. | 3/31/30 | 11/ 7/31 | 11/15/32 |

Standard Displacement: 9,800 tons (*Portland*), 9,950 (*Indianapolis*).

Dimensions: 610' 3" x 66' 1" x 17' 1" (*Portland*), 17' 4" (*Indianapolis*).

Propulsion: Four screws, four sets geared turbines, 107,000 SHP. Speed: 32.7 kts.

Armament: 9 8" in triple turrets; as of 1941, B 5"/25 AA, more added since, possibly 5"/38 DP. Numerous Bofors 40 mm and Oerlikon 20 mm AC AA probably also added more recently. Armor: 3"-4" belt, 3" turret faces, decks totaling 4". Planes: 4 (*Portland*), 5 (*Indianapolis*). Catapults: 2.

The *Indianapolis* and *Portland* are modified *Northampton*s, lengthened and with weight redistributed to improve seakeeping characteristics.

3 Augusta Class

Photo Page 67

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|----------------|------|------------------------|-----------|----------|---------|
| CHESTER (f) | CA27 | New York S. B. Co. | 3/ 6/2B | 7/ 3/29 | 6/24/30 |
| LOUISVILLE (f) | CA2B | Puget Sound Navy Yard | 7/ 4/2B | 9/ 1/30 | 1/15/31 |
| AUGUSTA (f) | CA31 | Newport News S. B. Co. | 7/ 2/2B | 2/ 1/30 | 1/30/31 |

Standard Displacement: 9,200 tons (*Chester*), 9,050 (others).

Dimensions: 600' 3" x 66' 1" x 16' 6" (*Louisville*), 16' 4" (others).

Propulsion: Four screws, four sets geared turbines, 107,000 SHP. Speed: 32.7 kts.

Armament: 9 B" in triple turrets; originally, only 4 5"/25 AA. Ships rearmed, 1941, more AA added, either 5"/25 or 5"/38 DP. More recently, Bofors 40 mm and Oerlikon 20 mm AC AA probably added. Armor: 3" belt, 1.5" gunhouses, decks totaling 3". Planes: 4. Catapults: 2.

Three other units of the *Augusta* class, the *Northampton*, *Chicago* and *Houston*, were lost in 1942 and 1943. Aside from the *Pensacola* and *Salt Lake City*, these were the first modern U. S. cruisers. Owing to fear of exceeding treaty limits, they are only lightly protected.

2 Pensacola Class

Photo Page 69

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|----------------|------|--------------------|-----------|----------|----------|
| PENSACOLA | CA24 | New York Navy Yard | 10/27/26 | 4/25/29 | 2 6/30 |
| SALT LAKE CITY | CA25 | New York S. B. Co. | 6/ 9/27 | 1/23/29 | 12/11/39 |

Standard Displacement: 9,100 tons.

Dimensions: 58B' 6" x 65' 3" x 16' 2".

Propulsion: Four screws, four sets geared turbines, 107,000 SHP. Speed: 32.7 kts.

Armament: 10 B" in two twin and two triple turrets; as of 1941, 4 5"/25 AA. AA armament increased in 1941, either 5"/38 DP or additional 5"/25 being added. More recently, Bofors 40 mm AC and Oerlikon 20 mm AC AA probably added. Armor: 3" belt, 1.5" gunhouses, decks totaling 3". Planes: 4. Catapults: 2.

Like all U. S. cruisers, the *Pensacola* and *Salt Lake City* are designed for long range (until the destroyers-for-bases swap with Great Britain, we had few overseas bases) and can cruise 13,000 nautical miles at 15 knots. (Newer vessels do even better.) These were the first major U. S. vessels to incorporate extensive use of aluminum in order to save weight.

25 or more Cleveland Class

Photo Page 72

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|------------------------------------|------|------------------------|-----------|----------|--------|
| CLEVELAND | CL55 | New York S. B. Co. | 7/ 1/40 | 11/ 1/41 | 1942 |
| COLUMBIA | CL56 | New York S. B. Co. | B/19/40 | 12/17/41 | 1942 |
| MONTPELIER | CL57 | New York S. B. Co. | 11/ 2/40 | 2/12/42 | 1942 |
| DENVER | CL5B | New York S. B. Co. | 12/26/40 | 4/ 4/42 | 1942 |
| SANTA FE | CL60 | New York S. B. Co. | 6/ 7/41 | 6/10/42 | 1943 |
| BIRMINGHAM | CL62 | Newport News S. B. Co. | 2/17/41 | 3/20/42 | 1942 |
| MOBILE | CL63 | Newport News S. B. Co. | 4/14/41 | 5/15/42 | 1942 |
| VINCENNES ex- <i>Flint</i> | CL64 | Bethlehem, Quincy | 9/23/41 | 7/17/43 | 1943-4 |
| PASADENA | CL65 | Bethlehem, Quincy | | | |
| SPRINGFIELD | CL66 | Bethlehem, Quincy | | | |
| TOPEKA | CL67 | Bethlehem, Quincy | | | |
| BILOXI | CL80 | Newport News S. B. Co. | 7/ 9/41 | 2/23/43 | 1943 |
| HOUSTON ex- <i>Vicksburg</i> | CL81 | Newport News S. B. Co. | 8/ 4/41 | 6/19/43 | 1943-4 |
| PROVIDENCE | CL82 | Bethlehem, Quincy | | | |
| MANCHESTER | CL83 | Bethlehem, Quincy | | | |
| FARGO | CL85 | Federal S. B. Co. | | | |
| CHEYENNE | CL86 | Federal S. B. Co. | | | |
| DULUTH | CL87 | Federal S. B. Co. | | | |
| MIAMI | CL89 | Cramp S. B. Co. | B/ 2/41 | 12/ B/42 | 1943 |
| ASTORIA ex- <i>Wilkes-Barre</i> | CL90 | Cramp S. B. Co. | 9/ 6/41 | 3/ 6/43 | 1943-4 |
| OKLAHOMA CITY | CL91 | Cramp S. B. Co. | 12/ 8/42 | | |
| LITTLE ROCK | CL92 | Cramp S. B. Co. | | | |
| GALVESTON | CL93 | Cramp S. B. Co. | | | |
| YOUNGSTOWN | CL94 | Cramp S. B. Co. | | | |
| NORFOLK | | Newport News S. B. Co. | | | |

Standard Displacement: 10,000 tons.

Dimensions: 600' w.l. x 61' 6" x 20'.

Propulsion: Four screws, four sets geared turbines. Speed*: over 33 kts.

Armament: 12 6"/47 in triple turrets; 12 5"/38 DP in twin turrets; 12 or more Bofors 40 mm AC AA; numerous 20 mm Oerlikon AC and other AA. Armor: 1.5"-5" belt; 3"-5" gunhouses; decks totaling 5". Planes: up to 8. Catapults: 2.

Between March 23, 1940 and Dec. 16, 1940, the Navy ordered a net of 32 ships of the Cleveland class, the largest number of identical cruisers ever projected, and, as of 1941, it was unofficially reported that 20 more of the same type were a possibility. Since Pearl Harbor, a probable eight of the first group (*Amsterdam*, *Tallahassee*, *New Haven*, *Huntington*, *Dayton*, *Wilmington*, *Buffalo* and *Newark*, CLS9, 61, 76-79 and 99-100) have been changed to Independence class aircraft carriers. Additional Independence carriers appear to have come from the projected later 20 Clevelands. No information has been released on 20 later Clevelands; the *Norfolk* listed above, however, is believed to belong to this group though she may be a San Diego. It is possible that the names assigned to the six first-group Clevelands converted to CVs will be assigned to cruisers in the second group. Ships in the second group will also doubtless be named after cities that have made outstanding contributions to the war effort whether by bond purchases or in some other way, if indeed the second group of Clevelands materializes as a large group of vessels.

The Clevelands are modifications of the enormously successful Brooklyn and St. Louis classes of light cruisers. They have approximately the same dimensions and the same hangar stern enabling them to carry a large complement of scouting planes. The principal change from the St. Louis type is the dropping of one 6" gun turret, the number three, and the addition of two twin 5"/38 DP turrets. They are also likely to be somewhat faster.

6 San Diego Class

Photo Page 72

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|-----------|------|----------------------|-----------|----------|---------|
| SAN DIEGO | CL53 | Bethlehem, Quincy | 3/27/40 | 7/26/41 | 1/10/42 |
| SAN JUAN | CL54 | Bethlehem, Quincy | 5/15/40 | 9/ 6/41 | 2/28/42 |
| OAKLAND | CL95 | Bethlehem, San Fran. | 7/13/41 | 10/23/42 | 1943 |
| RENO | CL96 | Bethlehem, San Fran. | 8/ 1/41 | 12/23/42 | 1943 |
| SPOKANE | CL97 | Bethlehem, San Fran. | | | |
| TUCSON | CL98 | Bethlehem, San Fran. | | | |

Standard Displacement: 6,000 tons.

Dimensions: 541' x 52' x 14'.

Propulsion: Four screws, four sets geared turbines, 75,000 SHP. Speed: 38 kts.

Armament: 16 5"/38 DP in twin turrets; numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA; 6 or 8 21" TT. Armor*: 3.5" belt; 2" deck. Planes: 0. Catapults: 0.

The San Diegos are an experimental type of multi-purpose light cruiser apparently based on the British Didos. They are meant to serve not only as anti-aircraft cruisers, as their all-AA armament indicates, but also as super-destroyer leaders. In the hands of a navy like the German, vessels of this type might also have made excellent commerce raiders. The first two vessels in the class, the *Atlanta* and *Juneau*, were lost in the Solomons in November, 1942. A new *Atlanta* has been reported; it may be the *Spokane* or *Tucson* renamed. The *San Diego*'s lack of scouting planes has been widely criticized and such may be included in the later ships of the class. CL-97 and 98 may be among three cruiser orders transferred from Bethlehem, San Francisco, to the Federal Shipbuilding yard in October, 1943.

1 St. Louis Class

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|-----------|------|------------------------|-----------|----------|---------|
| ST. LOUIS | CL49 | Newport News S. B. Co. | 12/10/36 | 3/15/38 | 5/19/39 |

Standard Displacement: 10,000 tons.

Dimensions: 614' x 61' 6" x 19' 9".

Propulsion: Four screws, four sets geared turbines, 100,000 SHP. Speed: 32.5 kts.

Armament: 15 6"/47 in triple turrets; 8 5"/38 DP in twin turrets; numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA probably added since 1941. Armor: 1.5"-5" belt; 3"-5" turret faces; decks totaling 5". Planes: up to 8. Catapults: 2.

The *St. Louis* is almost identical with the Brooklyns, differing mainly in having 5"/38 DP instead of 5"/25 AA in her secondary armament, with the 5"/38s grouped in twin turrets instead of in single open mounts. The *St. Louis*' single sister, the *Helena*, was lost in the Battle of Kula Gulf.

7 Brooklyn Class

Photo Page 73

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|------------------|------|------------------------|-----------|----------|----------|
| BROOKLYN | CL40 | New York Navy Yard | 3/12/35 | 11/30/36 | 9/30/37 |
| PHILADELPHIA (f) | CL41 | Philadelphia Navy Yard | 5/28/35 | 11/17/36 | 9/23/37 |
| SAVANNAH | CL42 | New York S. B. Co. | 5/31/34 | 5/ 8/37 | 3/10/38 |
| NASHVILLE | CL43 | New York S. B. Co. | 1/24/35 | 10/ 2/37 | 6/ 6/38 |
| PHOENIX | CL46 | New York S. B. Co. | 4/15/35 | 3/12/38 | 10/ 3/38 |
| BOISE | CL47 | Newport News S. B. Co. | 4/ 1/35 | 12/ 3/36 | 8/12/38 |
| HONOLULU (f) | CL48 | New York Navy Yard | 9/10/35 | 8/26/37 | 6/15/38 |

Standard Displacement: 9,700 tons (*Brooklyn*, *Philadelphia*, *Boise*), 9,475 (*Savannah*), 9,650 (*Honolulu*), 10,000 (*Nashville*, *Phoenix*). Dimensions: 614' x 61' 6" x 19' 5".

Propulsion: Four screws, four sets geared turbines, 100,000 SHP. Speed: 32.5 kts.

Armament: 15 6"/47 in triple turrets; 8 5"/25 AA; numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA probably added since 1941. Armor: 1.5"-4" belt; 3"-5" turret faces; decks totaling 5". Planes: up to 8. Catapults: 2.

The U. S. built the Brooklyns as replies to Japan's heavily-gunned Mogami class light cruisers. The 6" guns on the Brooklyns and later U. S. CLs are a special rapid-fire model capable of delivering a tremendous volume of fire. U. S. light cruisers have given an exceptional account of themselves. No Brooklyns have been lost, although the *Honolulu* suffered damage at Pearl Harbor. The *Boise*'s guns disposed of six Jap combatant vessels in the Battle of Cape Esperance, Oct. 12, 1942, earning her the sobriquet of the "one-ship fleet." The Brooklyns' other important innovation was the hangar stern. During refits in 1941-2, exposed AA guns were given splinter screens. It is possible that the 5"/25 AA have been replaced by the more up-to-date 5"/38s in some of these vessels.

10 Omaha Class

Photo Pages 71, 74

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|--------------|------|-------------------|-----------|----------|----------|
| OMAHA (f) | CL 4 | Todd S. B. Co. | 12/ 6/18 | 12/14/20 | 2/24/23 |
| MILWAUKEE | CL 5 | Todd S. B. Co. | 12/13/18 | 3/24/21 | 6/20/23 |
| CINCINNATI | CL 6 | Todd S. B. Co. | 5/15/20 | 5/23/21 | 1/ 1/24 |
| RALEIGH (f) | CL 7 | Bethlehem, Quincy | 8/16/20 | 10/25/22 | 2/ 6/24 |
| DETROIT (f) | CL 8 | Bethlehem, Quincy | 11/10/20 | 6/29/22 | 7/31/23 |
| RICHMOND (f) | CL 9 | Cramp S. B. Co. | 2/16/20 | 9/29/21 | 7/ 2/23 |
| CONCORD (f) | CL10 | Cramp S. B. Co. | 3/29/20 | 12/15/21 | 11/ 3/23 |
| TRENTON (f) | CL11 | Cramp S. B. Co. | 8/18/20 | 4/16/23 | 4/19/24 |
| MARBLEHEAD | CL12 | Cramp S. B. Co. | 8/ 4/20 | 10/ 9/23 | 9/ 8/24 |
| MEMPHIS (f) | CL13 | Cramp S. B. Co. | 10/14/20 | 4/17/24 | 2/ 4/25 |

Standard Displacement: 7,050 tons.

Dimensions: 555' 6" x 55' 4" x 13' 6".

Propulsion: Four screws, four sets geared turbines, 90,000 SHP. Speed: 35 kts.

Armament: 10 6"/53, four in twin turrets, balance in single gunhouses (*Raleigh*, *Marblehead*, *Detroit*, *Richmond*, *Cincinnati*); two additional 6" in others; 4 3"/50 AA; additional AA protection provided since 1941; 6 21" TT in triple mounts. Armor: 3" belt; 1.5" decks. Planes: 2. Catapults: 2.

By modern standards, the Omahas are undergunned and underprotected. Nevertheless, they have done quite well, the *Marblehead*, attached to the Asiatic squadron before the war, being a survivor of the Java Sea campaign. The *Raleigh* was damaged at Pearl Harbor.

SERVING *on the* SEVEN SEAS



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Nos. 649 to 664 and Beyond

Under the authorization act of Dec. 23, 1941, the U. S. Navy may build 150,000 tons of warships unrestricted as to category, of which, it is generally understood, 26,000-33,000 tons are being used for DD Nos. 649 to 664. The Five-Ocean-Fleet law of July 9, 1940 authorizes 900,000 tons more of destroyers and destroyer escorts (proportion allotted to each unstated). Thus, a huge fleet of DDs beyond the *Fletchers* and *Ellysons* of 1940 is under construction. In design, they probably bear a general resemblance to the *Fletchers* and *Ellysons*. A number of the post-*Fletchers* and post-*Ellysons* are listed below. Which of the two designs individual vessels follow is indicated (by the letters F or E in parentheses) in the few instances where known; so also is group 649-664 or later. Two new vessels listed below, the *Cassin* and *Downes*, replacing craft lost at Pearl Harbor and using parts from each, not only bear the old names, but the old numbers as well. Doubtless other yards than those mentioned here are participating, or will participate as soon as they have finished 1940 contracts, in the 649-664-and-beyond program. In October, 1943, contracts for seven destroyers, probably post-*Fletchers* or post-*Ellysons*, were shifted from west to east coast yards to ease the western manpower crisis.

Bath Iron Works: CAPERTON (5/21/43); INGERSOLL (E, 6/2B/43); REMEX (7/24/43); WADLEIGH (B/7/43); NORMAN SCOTT (8/28/43); MERTZ (9/11/43); LAFFEY (replaces Pacific casualty; 11/20/43); O'BRIEN (another Pacific replacement; 12/8/43).

Bethlehem, Staten Island: BADGER (4/43); COLAHAN (5/3/43); PICKING (6/1/43); HALSEY (6/30/43); POWELL (6/30/43); UHLMANN (7/30/43); BENHAM (replaces vessel of same name lost in Pacific; B/29/43); CUSHING (replaces vessel lost in Pacific; 9/30/43); MONSSEN (also replaces a Pacific casualty; 10/31/43); BLUE (still another replacement; 11/2B/43).

Boston Navy Yard: BENNION (E, 7/4/43); HEYWOOD L. EDWARD (E).

Charleston Navy Yard: ALBERT W. GRANT (5/29/43); BRYANT (5/29/43).

Federal Shipbuilding: DASHIELL (F, 2/6/43); KIDD (E, 2/28/43); BULLARD (E, 2/28/43); CHAUNCEY (3/2B/43); SLACK (3/2B/43); BRONSON (4/18/43); COTTEN, 669 (6/12/43); DORITCH, 670 (6/20/43); GATLING, 671 (6/20/43); HICKOX (7/4/43); HEALY (7/4/43); HUNT (8/1/43); HANCOCK (8/1/43); MARSHALL, 676 (8/2B/43); McDERMUT (10/17/43); MELVIN (10/17/43); McGOWAN (11/15/43); McNAIR (11/15/43); ALLEN M. SUMNER (12/1S/43); COOPER (E).

Gulf Shipbuilding: BEARSS, 654 (7/2S/43); VAN VALKENBERG (12/19/43).

Mare Island Navy Yard: CASSIN, 372 (3/20/43); DOWNES, 375 (3/20/43).

Builder uncertain: COGSWELL (6/43); DOHERTY (E).

116 Fletcher Class

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Bath Iron Works: NICHOLAS, 449 (1/31/42); O'BANNON, 450 (3/14/42); TAYLOR, 468 (6/7/42); CONWAY, 507 (6/30/42); CONY, 508 (6/30/42); CONVERSE, 509 (8/30/42); EATON, 510 (9/20/42); FOOTE, 511 (10/11/42); SPENCE, 512 (10/27/42); TERRY, 513 (11/22/42); THATCHER, 514 (12/7/42); ANTHONY, 515 (12/20/42); WADSWORTH, 516 (1/10/43); WALKER, 517 (1/31/43); ABBOT, 629 (2/43); BRAINE, 630 (3/7/43); ERBEN, 631 (3/21/43); HALE, 642 (S/43); SIGOURNEY, 643 (4/43); STEMBEL, 644 (5/43).

Bethlehem, San Francisco: ABNER READ, 526 (B/18/42); AMMEN, 527 (9/17/42); MULLANY, 528 (ex-*Beatty*, 10/10/42); BUSH, 529 (10/27/42); TRATHEN, 530 (10/21/42); HAZLEWOOD, 531 (11/20/42); HEERMAN, 532 (12/5/42); HOEL, 533 (1/43); McCORD, 534 (1/43); MILLER, 535 (3/8/43); OWEN, 536 (3/21/43); THE SULLIVANS, 537 (ex-*Putnam*, 4/4/43); STEPHEN POTTER, 538; TINGEY, 539; TWINING, 540 (7/11/43); YARNALL, 541.

Bethlehem, San Pedro: BOYD, 544 (10/29/42); BRADFORD, 545 (12/12/42); BROWN, 546; COWELL, 547 (4/43).

Bethlehem, Staten Island: BACHE, 470 (7/27/42); SEALE, 471 (B/25/42); BROWNSON, 518 (9/24/42); DALY, 519 (10/24/42); ISHERWOOD, 520 (11/24/42); KIMBERLEY, 521 (2/43); LUCE, 522 (3/6/43).

Boston Navy Yard: GUEST, 472 (2/20/42); BENNETT, 473 (4/16/42); FULLAM, 474 (4/16/42); HUDSON, 475 (6/3/42); HUTCHINS, 476 (2/20/42); CHARETTE, 581 (6/3/42);

CONNER, 582; HALL, 5B3; HALLIGAN, 584 (3/19/43); HARADEN, 5B5 (3/19/43); NEW-COMB, 5B6 (7/4/43).

Charleston Navy Yard: PRINGLE, 477 (ex-*Chevalier*, 5/12/42); STANLY, 47B (5/12/42); STEVENS, 479 (6/24/42); BELL, 5B7 (6/24/42); BURNS, 5BB (B/8/42); IZARD, 5B9 (B/8/42); PAUL HAMILTON, 590 (5/5/43); TWIGGS, 591 (5/43).

Consolidated, Orange, Tex.: AULICK, 569 (3/2/42); CHARLES AUSBURN, 570 (3/2/42); CLAXTON, 571; DYSON, 572; HARRISON, 573; JOHN RODGERS, 574 (5/7/42); McKEE, 575; MURRAY, 576 (B/16/42); SPROSTON, 577; WICKES, 578 (9/13/42); WILLIAM D. PORTER, 579 (11/27/42); YOUNG, 5B0 (10/11/42).

Federal Shipbuilding: FLETCHER, 445 (5/3/42); RADFORD, 446 (5/3/42); JENKINS, 447 (6/21/42); LA VALLETTE, 448 (6/21/42); SAUFLEY, 465 (7/19/42); WALLER, 466 (B/15/42); PHILIP, 498 (10/13/42); RENSHAW, 499 (10/13/42); RINGGOLD, 500 (11/11/42); SCHROEDER, 501 (11/11/42); SIGSBEE, 502 (12/7/42).

Gulf Shipbuilding: CAPPS, 550 (5/31/42); DAVID W. TAYLOR, 551 (7/4/42); EVANS, 552 (10/4/42); JOHN D. HENLEY, 553 (11/15/42).

Puget Sound Navy Yard: HALFORD, 480; LEUTZE, 4B1; HOWORTH, 592; KILLEN, 593; MANSFIELD, 594; METCALFE, 595; SHIELDS, 596; WILEY, 597.

Seattle-Tacoma Shipbuilding: FRANKS, 554 (12/7/42); HAGGARD, 555 (2/9/43); HAILEY, 556 (3/9/43); JOHNSTON, 557 (3/25/43); LAW5, 55B (4/22/43); LONGSHAW, 559 (6/4/43); MORRISON, 560 (7/4/43); PRITCHETT, 561 (7/31/43); ROBINSON, 562 (8/28/43); ROSS, 563; ROWE, 564; SMALLEY, 565; STODDARD, 566; WATTS, 567; WREN, 568.

Standard Displacement: 2100 tons.

Dimensions unreported.

Propulsion: Geared turbines.

Speed: over 37 kts.

Armament: Varies widely, depending on mission. Original reports said armament would consist of 8 5"/38 DP, but this has been cut down certainly in some instances, possibly in many, as photos show, in favor of 4 or 5 5", 4 or more Bofors 40 mm AC and B or more Oerlikon 20 mm AC and possibly other AA. Any of these vessels not assigned to fleet duties may have reduced torpedo armament. All are equipped with DCT.

The *Fletchers* are long, lean, graceful two-stack flush deckers designed as a reply to Japan's *Kagero* class of heavy destroyers. There were originally 119 *Fletchers*. The *Strong*, *Chevalier* and *De Haven* were lost in the Pacific.

2 Watson Class

Federal Shipbuilding: PERCIVAL, 452; WATSON, 482.

Standard Displacement: 2,100 tons.

Dimensions unreported.

Propulsion*: Super high-pressure, high-temperature geared turbines (*Percival*); Diesel-electric drive (*Watson*).

Armament: As *Fletcher* type.

The *Percival* and *Watson* are experimental vessels, the former possibly modeled after the *Dahlgren*, a World War I flush decker fitted experimentally in 1939 with geared turbines operating on 1300 pounds per square inch pressure and a temperature of 92S degrees F. The *Dahlgren* is reported to have achieved exceptional fuel economy. Doubtless we would now have more engineering plants like hers except for the fact that they require the very finest of high test alloys, which are naturally scarce in wartime.

65 Ellyson Class

Photo Pages 76, 80, 82

Bath Iron Works: EMMONS, 457 (B/23/41); MACOMB, 45B (9/22/41).

Bethlehem, Quincy: BANCROFT, 59B (12/31/41); BOYLE, 600 (6/5/42); CHAMPLIN, 601 (7/25/42); NIELDS, 616 (12/42); ORDONAU, 617 (12/42).

Bethlehem, San Francisco: WOODWORTH, 460 (11/29/41); CALDWELL, 605 (1/15/42); COGHLAN, 606 (2/15/42); FRAZIER, 607 (3/17/42); GANSEVOORT, 608 (4/11/42); GILLESPIE, 609 (3/8/42); HOBBY, 610 (6/4/42); KALK, 611 (6/15/42).

Bethlehem, San Pedro: KENDRICK, 612 (4/2/42); LAUB, 613 (6/1/42); MacKENZIE, 614 (6/2B/42); McLANAHAN, 615 (9/7/42).

Bethlehem, Staten Island: FARENHOLT, 491 (11/19/41); BAILEY, 492 (12/19/41); MEADE, 602 (2/14/42); MURPHY, 603 (4/29/42); PARKER, 604 (5/12/42).

Boston Navy Yard: FORREST, 461 (6/14/41); FITCH, 462 (6/14/41); COWIE, 632 (9/27/41); KNIGHT, 633 (9/27/41); DORAN, 634 (12/10/41); EARLE, 635 (12/10/41).

Charleston Navy Yard: CORRY, 463 (7/2B/41); HOBSON, 464 (9/8/41); TILLMAN, 641 (12/20/41).

Federal Shipbuilding: ELLYSON, 454 (7/25/41); HAMBLETON, 455 (9/26/41); RODMAN, 456 (9/26/41); BUCHANAN, 4B4 (11/22/41); LANSDOWNE, 4B6 (2/20/42); LARDNER, 4B7 (3/20/42); McCALLA, 4BB (3/20/42); MERVINE, 4B9 (5/3/42); QUICK, 490 (5/3/42); DAVISON, 61B (7/19/42); EDWARDS, 619 (7/19/42); GLENNON, 620 (B/26/42); JEFFERS, 621 (B/26/42); NELSON, 623 (9/15/42); STEVENSON, 64S (11/11/42); STOCKTON, 646 (11/11/42); THORN, 647 (2/28/43); TURNER, 64B (2/2B/43).

Norfolk Navy Yard: HERNDON, 638 (2/5/42); SHUBRICK, 639 (4/1B/42).

Philadelphia Navy Yard: BUTLER, 636 (2/12/42); GHERARDI, 637 (2/12/42).

Seattle-Tacoma Shipbuilding: CARMICK, 493 (3/8/42); DOYLE, 494 (3/17/42); ENDI-COTT, 495 (4/5/42); McCOOK, 496 (ex-Farley, 4/30/42); FRANKFORD, 497 (5/17/42); BALDWIN, 624 (8/14/42); HARDING, 625 (6/2B/42); SATTERLEE, 626 (7/17/42); THOMPSON, 627 (B/10/42); WELLES, 62B (9/7/32).

Standard Displacement: 1,700 tons.

Dimensions unreported.

Propulsion: Two screws, two sets high pressure, high temperature geared turbines. Speed*: Over 36 kts.

Armament: As with the Fletchers, and also older types, the armament of the Bristols varies according to duties. As fleet destroyers, the armament originally reported is 4 5"/38 DP, numerous smaller AA, 10 21" TT in quintuple mounts, and DCTs. On escort one of the 5" guns may be dropped in favor of Bofors and Oerlikon 40 and 20 mm AC AA, and the number of TTs reduced.

The *Hambleton* of the Ellyson class was the first U. S. combatant vessel to be placed in commission after Pearl Harbor. Seven Bristols had been lost up to press time, the class originally numbering 72. The Ellysons are also known as the Bristols, but the *Bristol* is among units of the class lost.

20 Benson Class

Photo Pages 80, 82

Bath Iron Works: GLEAVES, 423 (12/9/39); NIBLACK, 424 (5/18/40); LIVERMORE, 429 (ex-Grayson, 8/3/40); EBERLE, 430 (9/14/40); WOOLSEY, 437 (2/12/41); LUDLOW, 438 (11/11/40).

Bethlehem, Quincy: BENSON, 421 (11/15/39); MAYO, 422 (3/26/40).

Boston Navy Yard: MADISON, 425 (10/20/39); LANSDALE, 426 (10/20/39); WILKES, 441 (5/31/40); NICHOLSON, 442 (5/31/40).

Charleston Navy Yard: HILARY P. JONES, 427 (12/14/39); GRAYSON, 435 (ex-Livermore, B/7/40); SWANSON, 443 (11/2/40).

Federal Shipbuilding: PLUNKETT, 431 (3/9/40); KEARNY, 432 (3/9/40); EDISON, 439 (11/23/40); ERICSSON, 440 (11/23/40).

Puget Sound Navy Yard: CHARLES F. HUGHES, 42B (5/16/40).

Standard Displacement: 1,630 tons.

Dimensions: 348' x 35' 4" x 10' 2".

Propulsion: Two screws, two sets high pressure, high temperature geared turbines, 50,000 SHP. Speed: 37 kts.

Armament: 5 5"/38 as of 1940; one 5" since reported removed to allow additional AA; numerous Bofors 40 mm and Oerlikon 20 mm AC AA probably now carried. 10 21" TT in fleet Bensons, possibly less on units assigned to escort. DCTs.

The *Kearny* was torpedoed by a Nazi submarine in the Atlantic on Oct. 16, 1941. She was able to make port, however, thanks to a skillful crew, and is now back in action. Four Bensons had been lost as of Oct. 1, 1943.

7 Hughes Class

Photo Page 79

Bath Iron Works: HUGHES, 410 (6/17/39).

Charleston Navy Yard: ROE, 41B (6/21/39).

Federal Shipbuilding: ANDERSON, 411 (2/4/33).

Newport News Shipbuilding: MUSTIN, 413 (12/B/38); RUSSELL, 414 (12/B/38).

Norfolk Navy Yard: MORRIS, 417 (6/1/39); WAINWRIGHT, 419 (6/1/39).

Standard Displacement: 1,640 to 1,670 tons. Dimensions: 341' 3" x 36' 1" x 11' 6".

Propulsion: Two screws, two sets high pressure, high temperature geared turbines, also cruising turbine, 50,000 SHP. Speed: 37 kts.

Armament: 5 5"/38 DP, numerous smaller, including Bofors 40 mm and Oerlikon 20 mm AC and other AA. One 5" possibly removed to add to AA. 8 21" TT in quadruple mounts (possibly reduced in units on escort duty). DCTs.

The Hughes class is better known as the Sims class, but its original name ship is among the four of the type that had been lost up to Oct. 1, 1943. The Sims type combined successful features of such pioneering types as the *Mahan* and *Craven*. At first, their displacement was to be only 1,530 tons, but keels were weighted to improve balance. The *Hammann*, one of the lost ships of this group, battered 39 knots on her trials. These are the first U. S. DDs with special cruising turbines, in addition to their main engines, for economical cruising.

10 McCall Class

Bethlehem, San Francisco: McCALL, 400 (11/20/37); MAURY, 401 (2/14/38).

Boston Navy Yard: MAYRANT, 402 (S/14/3B); TRIPPE, 403 (5/14/38).

Charleston Navy Yard: STERETT, 407 (10/27/3B).

Federal Shipbuilding: ELLET, 39B (6/11/38); LANG, 399 (8/27/3B).

Norfolk Navy Yard: STACK, 406 (S/5/3B).

Philadelphia Navy Yard: RHIND, 404 (7/2B/3B).

Puget Sound Navy Yard: WILSON, 408 (4/12/39).

Standard Displacement: 1,500 tons. Dimensions: 341' B" x 34' 10" x 9' 10".

Propulsion: Two screws, two sets high pressure, high temperature geared turbines, 42,800 SHP. Speed: 36.5 kts.

Armament: 4 5"/3B DP, numerous smaller AA. 16 21" TT in quadruple mounts, possibly reduced since war to add to AA firepower on vessels assigned to escort missions. DCTs.

The McCalls are practically repeat *Cravens*. Most noticeable difference is different location of searchlights.

5 Somers Class

Photo Page 77

Federal Shipbuilding: SOMERS, 381 (3/13/37); WARRINGTON, 383 (5/15/37).

Bath Iron Works: SAMPSON, 394 (4/16/3B); DAVIS, 395 (7/30/38); IOUETT, 396 (9/24/3B).

Standard Displacement: 1,850 tons. Dimensions: 381' x 36' 2" x 10' 3".

Propulsion: Two screws, two sets high pressure, high temperature geared turbines, 52,000 SHP. Speed: 37.5 kts.

Armament: 8 5"/38 DP in twin gun houses; numerous smaller AA, possibly since increased by reduction of number of 5". 12 21" TT in quadruple mounts. DCTs.

The Somers', designed as destroyer squadron leaders, are noteworthy vessels in many respects. The *Somers* herself was the first vessel in the U. S. Navy to operate on a steam condition of 600 pounds per square inch and 850 degrees F. As a result of the *Somers*' success in tests in 193B, that steam condition was made standard for the new navy the U. S. was even then building. The Somers class like the heaviest known torpedo salvo. The McCalls and *Cravens* have four more tubes each, but they are not on the center line and each tube can be fired only in one broadside direction; the *McCall* salvo is thus only 8 tubes. All 12 *Somers* tubes can be fired on either broadside.

7 Craven Class

Photo Pages 75, 82

Bethlehem, Quincy: GRIDLEY, 380 (12/1/36); CRAVEN, 382 (2/25/37).

Boston Navy Yard: MUGFORD, 389 (10/31/36); RALPH TALBOT, 390 (10/31/36).

Norfolk Navy Yard: BAGLEY, 386 (9/3/36); HELM, 388 (5/27/37).

Puget Sound Navy Yard: PATTERSON, 392 (5/6/37).

Standard Displacement: 1,500 tons.

Dimensions: 341' 8" x 34' 10" x 9' 10".

Propulsion: Two screws, two sets high pressure, high temperature geared turbines, 42,800 SHP. Speed: 36.5 kts.

Armament: 4 5"/38 DP, numerous smaller AA. 16 21" TT in quadruple mounts, probably reduced in vessels on escort assignment to allow for increased AA. DCTs.

The Cravens are generally similar to the Mahans, but differ in having one less 5" gun and higher pressure-temperature turbines. The Cravens were the first of a group of single-stackers (Somers', McCalls and Sims' are the others). All DDs from the Cravens forward have all main guns in gunhouses. Earlier vessels (except World War I flush deckers, of course, which have none at all) have gunhouses only for forward armament.

2 Fanning Class

Photo Page 78

Bethlehem, Staten Island: DUNLAP, 384 (4/18/36); FANNING, 385 (9/18/36).

Standard Displacement: 1,500 tons.

Dimensions: 341' 8" x 34' 10" x 9' 10".

Propulsion: Two screws, two sets high pressure, high temperature geared turbines, 42,800 SHP. Speed: 36.5 kts.

Armament: 5 5"/38 DP, numerous smaller AA. 12 21" TT. 5" guns and TT both possibly reduced, if these vessels are now used on convoy work, to make room for more AA. DCTs.

The *Fanning* and *Dunlap* are modifications of the famous Mahan class, with pole instead of tripod foremasts.

7 Selfridge Class

Photo Page 78

Bethlehem, Quincy: PHELPS, 360 (7/18/35); CLARK, 361 (10/15/35); MOFFETT, 362 (12/11/35); BALCH, 363 (3/24/36).

New York Shipbuilding: SELFRIDGE, 357 (4/18/36); McDOUGAL, 358 (7/17/36); WINSLOW, 359 (9/21/36).

Standard Displacement: 1,805 tons (*Phelps, Clark*); 1,825 (*Moffett, Balch*); 1,850 (others). Dimensions: 381' x 36' 2" x 10' 3".

Propulsion: Two screws, two sets high pressure, high temperature geared turbines, 50,000 SHP. Speed: 37 kts.

Armament: 8 5"/38 DP in twin gunhouses as of 1940, possibly reduced to provide weight and space for additional AA; numerous small AA; 8 21" TT in quadruple mounts; DCTs.

The Porter class of leaders (now known as the Selfridges since the *Porter* herself has been lost) have powerplants intermediate between the revolutionary Mahans and later vessels so far as operating temperature and pressure are concerned: 450 pounds per square inch and 600 degrees F. They have been enormously successful boats.

12 Mahan Class

Photo Page 81

Bath Iron Works: DRAYTON, 366 (3/26/36); LAMSON, 367 (6/17/36).

Bethlehem, Staten Island: MAHAN, 364 (10/15/35); CUMMINGS, 365 (12/11/35).

Boston Navy Yard: CASE, 370 (9/14/35); CONYNGHAM, 371 (9/14/35).

Federal Shipbuilding: FLUSSER, 368 (9/28/35); REID, 369 (1/11/36).

Mare Island Navy Yard: SMITH, 378 (2/20/36).

Norfolk Navy Yard: TUCKER, 374 (2/26/36).

Philadelphia Navy Yard: SHAW, 373 (1935).

Puget Sound Navy Yard: PERKINS, 377 (12/31/35).

Standard Displacement: 1,450 tons (*Mahan*), 1,465 (*Cummings, Perkins*), 1,480 (*Drayton, Lamson, Flusser, Reid, Smith*), 1,500 (others). Dimensions: 341' 8" x 34' 10" x 9' 8" (*Mahan*), 9' 9" (1,465, 1,480 ton ships), 9' 10" (others).

Propulsion: Two screws, two sets high temperature, high pressure geared turbines, 42,800 SHP. Speed: 36.5 kts.

Armament: 5 5"/38 in gunhouses forward, open mounts amidship and astern, as of 1941; numerous AA. Amidship 5" possibly removed since war to allow greater AA. 12 21" TT in quadruple mounts (possibly less in Mahans on escort missions). DCTs.

Historically, the *Mahan* and her sisters are the most important vessels the U. S. Navy has built in the last generation, for it was in the *Mahan* that the Navy first applied high temperature, high pressure steam to the propulsion of U. S. warships. The Mahans were designed by the firm of Gibbs & Cox, called in by the Navy because of their experience with high pressure and high temperature on merchant ships, in which hp:ht has been used since the last war. The Navy had a great deal of trouble with the Mahans while under construction and in the first years of their service, but this is not surprising since their powerplants represented the greatest single step forward the U. S. Navy had ever taken. They were originally intended to operate at 400 pounds per square inch pressure and 700 degrees F., but had to be cut back to 600 degrees. (700 degrees was not exceeded until the Somers class two years later). Even so, this was an enormous advance: the Mahans' predecessors, the Farraguts, operated on 300 pounds and 450 degrees. In addition, trouble was had with the Mahans' deck plating, plates buckling in some instances. The Mahans were—and are—also cramped, and major repairs to the engines required the opening of holes in the vessels' sides. But these difficulties were more than made up in later destroyers and have been overcome to a large extent in the Mahans, too. The *Shaw* of this class was very nearly 50 per cent destroyed at Pearl Harbor, but has been salvaged and is back in service.

8 Farragut Class

Photo Page 78

Bath Iron Works: DEWEY, 349 (ex-*Phelps*, ex-*Dewey*, 7/28/34).

Bethlehem, Quincy: FARRAGUT, 348 (ex-*Smith*, ex-*Farragut*, 9/20/32).

Boston Navy Yard: MacDONOUGH, 351 (8/22/34); MONAGHAN, 354 (1/9/35).

New York Navy Yard: HULL, 350 (1/31/34); DALE, 353 (1/23/35).

Philadelphia Navy Yard: AYLWIN, 355 (7/10/34).

Puget Sound Navy Yard: WORDEN, 352 (10/27/34).

Standard Displacement: 1,365 tons (*Farragut*), 1,345 (*Dewey*), 1,375 (*Aylwin*), 1,410 (*Worden*), 1,395 (others). Dimensions: 341' 3" x 34' 2" x 8' 8" (*Farragut*), 8' 7" (*Dewey*), 8' 9" (*Aylwin*), 8' 10" (others).

Propulsion: Two screws, two sets geared turbines, 42,800 SHP. Speed: 36.5 kts.

Armament: 5 5"/38 DP as in Mahans, one possibly removed to make room for more AA. 8 21" TT in quadruple mounts, possibly reduced in units assigned to escort duties. DCTs.

The Farraguts were the first U. S. destroyers designed since the four-stackers of the last war and, all things considered, have been remarkably successful. Some units of the class made 41 knots on trials. At economical speeds, their radius is 6,000 miles (exceeded to a considerable extent in later destroyer classes, whose high pressure, high temperature engines permit great fuel economy), which is very nearly double the range of most foreign destroyers.

29 Four-Stacker Class of 1917-18

Photo Page 82

Cramp: BROOME, 210 (5/14/19); ALDEN, 211 (6/7/19); BARKER, 213 (9/11/19); JOHN D. EDWARDS, 216 (10/18/19); WHIPPLE, 217 (11/6/19); PARROTT, 218 (11/25/19); MacLEISH, 220 (12/18/19); SIMPSON, 221 (4/28/20); SULMER, 222 (1/22/20); McCORMICK, 223 (2/14/20); JOHN D. FORD, 228 (9/2/20); PAUL JONES, 230 (9/30/20).

Mare Island Navy Yard: LITCHFIELD, 336 (8/12/19); DECATUR, 341 (10/29/21).

Newport News Shipbuilding: DALLAS, 199 (5/31/19).

New York Shipbuilding: HATFIELD, 231 (3/17/19); BROOKS, 232 (4/24/19); GILMER, 233 (5/24/19); FOX, 234 (6/12/19); KANE, 235 (8/12/19); HUMPHREYS, 236 (7/28/19); OVERTON, 239 (7/10/19); KING, 242 (10/14/20); SANDS, 243 (10/28/19); BAINBRIDGE, 246 (6/12/20); GOFF, 247 (6/2/20); BARRY, 248 (10/28/20); LAWRENCE, 250 (7/10/20).

Norfolk Navy Yard: NOA, 343 (6/28/19).

Standard Displacement: 1,190 tons.

Dimensions: 314' 4" x 30' 8" x 9' 3".

Propulsion: Two screws, two sets geared turbines, 24,000 to 27,000 SHP in different units. Speed: 35 kts.

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Armament: Originally, 4 5"/51 (*Hatfield, Brooks, Gilmer, Fox, Kane*), 4 4"/50 (others); 1 3"/23 AA, 12 21" TT in quadruple mounts. DCTs. All have probably been rearmed for escort duties: more AA, possibly reduced TT and main battery.

These 29 vessels are the sole destroyer survivors of 67 flush-deckers of identical basic design ordered in 1917-18; the balance, which include the heroic group that went down in the Java Sea, have been lost, scrapped, wrecked, traded to Britain, or converted to auxiliaries of various types. The *Noa* was equipped experimentally in 1941 with a seaplane and a derrick. Several of them have had their last three funnels cut down in height, altering their appearance considerably. None, of course, has approached her designed speed in years, but they are nevertheless extremely useful vessels. None was actually completed in time to serve in the last war. A number of these vessels have been rearmed for escort duties, but details are lacking.

32 Four-Stacker Class of 1916-17

Bethlehem, Quincy: CROSBY, 164 (1/28/18).

Bethlehem, San Francisco: SCHLEY, 103 (3/28/18); CHEW, 106 (5/26/18); CRANE, 109 (7/4/18).

Cramp: RATHBURNE, 113 (12/27/17); TALBOT, 114 (2/20/18); WATERS, 115 (3/9/18); DENT, 116 (3/23/18); LEA, 118 (4/20/18); TARBELL, 142 (5/28/18); UPSHUR, 144 (7/4/18); GREER, 145 (8/1/18); ROPER, 147 (8/17/18); BRECKINRIDGE, 148 (8/17/18); BARNEY, 149 (9/5/18); BLAKELEY, 150 (9/19/18); BIDDLE, 151 (10/3/18); DU PONT, 152 (10/22/18); BERNADOU, 153 (11/7/18); ELLIS, 154 (11/30/18); COLE, 155 (1/11/19); J. FRED TALBOTT, 156 (12/14/18).

Mare Island Navy Yard: KILTY, 137 (4/25/18); KENNISON, 138 (6/8/18); WARD, 139 (ex-Cowell, 6/1/18); HAMILTON, 141 (1/15/19).

New York Shipbuilding: TATTNALL, 125 (9/5/18); BAABITT, 128 (9/30/18); DICKERSON, 157 (3/12/19); LEARY, 158 (12/18/18); SCHENCK, 159 (4/23/19); HERBERT, 160 (5/8/19).

Standard Displacement: 1,060 tons (*Schley, Chew, Crane, Kilty, Kennison, Ward, Crosby*); 1,090 (others). Dimensions: 314' 4" x 30' 6" x 8' 6" (1,060-ton boats), 8' 8" (others).

Propulsion: Two screws, two sets geared turbines, 24,000 to 27,000 SHP. Speed: 35 kts.

Armament: 4 4"/50; 1 3"/23 AA; 12 21" TT in quadruple mounts, as of date of construction. Now probably rearmed (fewer TT, possibly fewer 4", more AA) for escort duties. DCTs.

Like their somewhat heavier successors of 1917-18, many of the 111 1060-1090 ton four-stackers are now serving as auxiliaries of one kind or another, or in the British Navy, besides as U. S. destroyers. The *Greer* was the first U. S. vessel to be fired at by a German submarine—as she was en route to Iceland in September of 1941. (The U-boat missed.) The *Hamilton* now has only three funnels. The *Blakeley* lost her bow in a U-boat attack near Martinique in 1942, is now back in service with a new fore end.

1 Allen Class

Bath Iron Works: ALLEN, 66 (1916).

Standard Displacement: 920 tons. Dimensions: 315' 3" x 29' 5" x 8' 4".

Propulsion: Two screws, two sets geared turbines, 17,500 SHP. Speed: 30 kts.

Armament: 4 4"/50; 2 3"/23 AA; 12 21" TT in quadruple mounts, as of 1918. Possibly rearmed when recommissioned in 1940. DCTs.

The *Allen* is the U. S.' oldest combatant vessel still on active service. Idle throughout most of the 18 years from 1922, she is now back in harness and based at Pearl Harbor. Four sisters served as Coast Guard rum runner chasers during Prohibition, as did a number of destroyers of earlier types which have long since been broken up.

UNITED STATES - ANTI-SUBMARINE

Destroyer Escorts

Late in 1942, owing to the inability of smaller patrol craft to cope with the problem and the cost and time requirement of full-fledged destroyers, the U. S. Navy evolved a new, heavier type of anti-submarine craft for the Battle of the Atlantic, the destroyer escort. Two types of DE are now being built in quantity. (Authorized by the Five-Ocean-Fleet law of July 9, 1942.) One is the so-called "fast" type, reported to be driven by geared turbines and to approximate the British Hunt class "light" destroyers in performance and armament. The other is the Diesel-

powered "slow" DE, with a speed of approximately 22 knots (i.e., just fast enough to overhaul Nazi U-boats, whose surface speed approaches 21 knots). The slow DE has somewhat better performance than another important late type of anti-submarine craft, the British-designed "frigate." Both slow and fast DEs displace about 1300 tons, are twin-screwed and cost up to \$3,500,000 each, less than half the cost of a modern full-fledged destroyer. The DE's surface armament is much smaller than the regular destroyer's (which is four or more 5" guns; her AA armament is plentiful, however, including both 80s 40 mm and Oerlikon 20 mm AC. DE construction began to taper off late in 1943, with improvement of the U-boat situation. In October of that year, contracts for 305, none yet begun, were cancelled. About 300 had been completed by the end of the year.

DEs are being built by yards in every part of the U. S., including several inland points (for example, at Bay City, Mich. on Lake Huron, by the Defoe Shipbuilding Company). The Bethlehem yard at Hingham, Mass. is turning out lend-lease DEs for Great Britain; names will be found under Great Britain. Others have been built for the fleet of the French National Committee. Among DEs so far identified (whether of slow or fast type unknown) are:

EDSALL (bears name of destroyer lost in 1942 Indies campaign; 11/1/42); JACOB JONES (named for DD sunk by U-boat in Atlantic; 11/22/42); STEWART (named for another Far East campaign victim; 11/22/42).

STURTEVANT (named for still another 1942 Atlantic loss; 12/13/42); HAMMANN (bears name of DD torpedoed at Midway; 12/15/42); KEITH (12/21/42); MOORE (12/21/42); TOMICH (12/28/42).

J. RICHARD WARD (1/7/43); BUCKLEY (1/9/43); PILLSBURY (named for Far East campaign loss; 1/10/43); POPE (also named for Far East DD loss; 1/12/43); FLAHERTY (1/13/43); C. R. GREER (1/18/43); HERBERT C. JONES (1/19/43); OTTERSTETTER (1/19/43); R. C. WHITMAN, Jr. (1/19/43); PEARY (likewise name of a DD lost in Far East in early days of war; 1/21/43); SLOAT (1/21/43); F. C. DAVIS (1/24/43); DOUGLAS L. HOWARD (1/24/43).

FARQUHAR (2/15/43); SNOWDEN (2/19/43); STANTON (2/21/43); D. T. GRIFFIN (2/22/43); SEID (2/22/43); SMARTT (2/22/43); W. S. BROWN (2/22/43); W. C. MILLER (2/22/43); HILL (2/28/43).

J. R. Y. BLAKELY (3/7/43); FESSENDEN (3/9/43); HOPPING (3/9/43); DONNELL (3/13/43); FISKE (3/14/43); SWASEY (3/18/43); FROST (3/21/43); MARCHAND (3/21/43); FOGG (3/26/43); LEVY (3/28/43); McCONNELL (3/28/43); BULL (3/43); DIONNE (3/43).

INCH (4/4/43); BLAIR (4/6/43); BROUGH (4/13/43); HURST (4/14/43); CAMP (4/16/43); OSTERHAUS (4/18/43); PARKS (4/18/43); CHATELAIN (4/21/43); PETTIT (4/21/43); NEUNZER (4/25/43); HOWARD D. CROW (4/26/43); DEMPSEY (4/43); GANTNER (4/43); WINTNER (4/43).

POOLE (5/8/43); RICKETTS (5/10/43); SELLSTROM (5/12/43); PETERSON (5/15/43); CALVERT (5/22/43); HARVESON (5/22/43); RAMSDEN (5/24/43); JOYCE (5/25/43); MILLS (5/26/43); AMICK (5/27/43); ATHERTON (5/27/43); SCHMITT (5/29/43); ACREE (5/43); BARON (5/43); BURKE (5/43); CARLSON (5/43); JEFFERY (5/43); STEELE (5/43).

SANDARS (6/4/43); KIRKPATRICK (6/5/43); LEOPOLD (6/12/43); MENGES (6/15/43); CHRISTOPHER (6/19/43); CARROLL (6/21/43); BOOTH (6/21/43); MOSLEY (6/26/43); FRAMMENT (6/28/43); NEWELL (6/29/43); RHODES (6/29/43); RICKEY (6/30/43); AMES-BURY (6/43); DOUGLAS BLACKWOOD (6/43); COOLBAUGH (6/43); DARBY (6/43); ENRIGHT (6/43); LEE FOX (6/43); FRANCIS M. ROBINSON (6/43); SOLAR (6/43).

LOVELACE (7/5/43); SAVAGE (7/15/43); VANCE (7/16/43); THOMAS (7/21/43); FALGOUT (7/24/43); COONER (7/25/43); ELDRIDGE (7/25/43); HARMON (first U. S. Navy vessel named for a Negro; 7/25/43); LOWE (7/28/43); LANSING (7/29/43); DURANT (7/30/43).

TATUM (8/7/43); DUFFY (8/8/43); BORUM (8/14/43); CALCATERRA (8/16/43); CHAMBERS (8/17/43); MALOY (8/18/43); MICKA (8/22/43); REYBOLD (8/22/43); HAINES (8/26/43); FINCH (8/28/43); HOWARD DEAL MERRILL (8/28/43); HAVERFIELD (8/30/43); KRETCHMER (8/31/43); JORDAN (8/43); MARTS (8/43); PENNEWILL (8/43); THOMASON (8/43); WEDDERBURN (8/43).

HERZOG (9/5/43); McANN (9/5/43); LOESER (9/11/43); JENKS (9/12/43); TRUMPETER (9/19/43); STRAU8 (9/19/43); GILLETTE (9/25/43).

GUSTAFSON (10/3/43); MILES (10/3/43); DAY (10/14/43); RUDDEROW (10/14/43); RIDDLE (10/17/43); WESSON (10/17/43); KENYON (10/30/43); STERN (10/31/43); SWEARER (10/31/43).

A. J. ROBERTS (11/15/43); BRONSTEIN (11/15/43); O'NEILL (11/15/43); BERMINGHAM (11/15/43); DANIEL (11/17/43); MASON (11/17/43); BAKER (11/28/43); COFFMAN (11/28/43).

EISNER (12/12/43); GARFIELD THOMAS (12/12/43).

BARBER (1943); CHASE (1943); FECHTELER (1943); LANING (1943); LOY (1943); REEVES (1943).

BARNES; CABANA; CALLAGHAN; CHARLES LAWRENCE; FOWLER; DONALDSON; FORMOE; FOSS; GARY; G. W. INGRAM; LAMONS; MANNING; NEUENDORF; NEWMAN; REUBEN JAMES (named for the DD torpedoed by a Nazi U-boat in the fall of 1941); RICH; SIMS (bears name of DD lost in Coral Sea); SPANGENBERG; VOGELSANG.

Frigates

In 1943, the U. S. Maritime Commission began the construction of a considerable number of frigates for the Navy. Frigates, of British design, are essentially heavier, twin-screw corvettes, not quite the equals of US DEs, but a vast improvement over the corvette, which, however useful, is not the most effective of convoy vessels, especially during winter months in the North Atlantic. Frigates are 303' by 37' 6" (draft unreported). One U. S. frigate, the *Danville*, was built in Canada and turned over to the U. S. under reciprocal lend-lease, and Canada is building others for the U. S. Many U. S.-built frigates are constructed on the Great Lakes. Following is a list of identified U. S. frigates:

Canadian-built: DANVILLE (1943).

American Shipbuilding: HURON (7/3/43); BAYONNE (9/12/43).

California-Wilmington: BURLINGTON (12/7/43).

Permanente Shipbuilding: BROWNSVILLE (11/15/43).

Walter Butler Shipyard: POUGHKEEPSIE (8/12/43); READING (8/28/43); NEWPORT (8/43).

Builder uncertain: ALEXANDRIA (8/43); CHATTANOOGA; SHEBOYGAN (8/43).

1 or more Corvettes

The U. S. Navy operates one corvette, the *U. S. S. Pert*, and possibly others, built by Canada under reciprocal lend-lease. For details of corvettes, see Great Britain.

2 Erie Class Gunboats

Photo Page 93

ERIE (PG-50, 1/29/36), CHARLESTON (PG-51, 2/25/36). Built at New York and Charleston Navy Yards respectively. Standard Displacement: 2,000 tons. Dimensions: 328' 6" x 41' 4" x 11' 6". Propulsion: Two screws, two sets geared turbines, 6,200 SHP. Speed: 20 kts. Armament: 4 single 6"/47 behind large shields; 10 smaller, AA. Armor: 1"-3" at waterline; decks totaling 3"; 1" shields. Each carries a folding seaplane.

The *Erie* and *Charleston* are the two latest and largest of a class of vessel which the U. S. has built only in small numbers in recent years, the gunboat. Gunboats, or sloops, as the British call them, are to be found more in the navies of colonial powers, where a vessel of fairly heavy armament and slow speed has certain uses as a keeper of "law and order" in far regions. It is not the most efficient vessel by any means for escort and patrol work, its main uses in war. The *Erie* and *Charleston* hulls and machinery are generally similar to the Campbell class of U. S. Coast Guard cutters and are the largest gunboats permitted by the naval limitation treaties in force at the time they were built. In peacetime, the *Charleston* operates in Alaskan waters, while the *Erie* is flagship of the Central American Special Service Squadron. The *Erie* was torpedoed and beached at Curacao on Nov. 12, 1942, but has since been repaired.

1 Tulsa Class Gunboat

TULSA (PG-22, 8/25/22). Built at Charleston Navy Yard. Standard Displacement: 1,270 tons. Dimensions: 241' 2" x 41' 3" x 9' 11". Propulsion: Single screw, geared turbine, 850 SHP. Speed: 12 kts. Armament: 3 4"/50; 9 smaller, AA.

The *Tulsa* is the sole survivor of a once fairly numerous group of U. S. ships. The *Tulsa* was based at Canton, China before the war, as was her sister, *Ashville*, lost in the Java Sea early in 1942.

1 Sacramento Class Gunboat

SACRAMENTO (PG-19, 2/14). Built by Cramp. Standard Displacement: 1,140 tons. Dimensions: 226' 2" x 40' 10" x 9' 7". Propulsion: Single screw, reciprocating engine converted to oil fuel, 950 SHP. Speed: 12.5 kts. Armament: 3 4"/50; 8 smaller, some AA.

The *Sacramento* is now with the U. S. Inshore Patrol. Before the war, she was on the Asiatic station.

2 Dubuque Class Gunboats

DUBUQUE (PG-17, 1904), PADUCAH (PG-18, 1904). Standard Displacement: 1,085 tons. Dimensions: 200' 5" x 35' x 12' 3". Propulsion: Single screw, reciprocating engines, 1,220 SHP. Speed: 12.5 kts. Armament: 4 4"/40; 4 6-pounders.

The *Dubuque* and *Paducah* were used as training ships between wars. Their duties since their re-rating as gunboats have not been stated.

8 or more ex-Yachts Rated Gunboats

VIXEN (PG-53, ex-*Orion*, 1929). 3,015 tons gross. Dimensions: 333' x 46' 9" x 16'. Propulsion: Diesels, two screws, 3,600 HP.

ST. AUGUSTINE (PG-54, ex-*Noparo*, 1929). 1,300 tons gross. Dimensions: 272' o.a., beam and draft unreported. Propulsion, two screws, two turbo-electric units, 2,600 SHP.

JAMESTOWN (PG-55, ex-*Alder*, 1928). 2,076 tons gross. Dimensions: 294' x 38' x 16'. Propulsion: Diesels, two screws, 3,000 HP. Pre-war Coast Geodetic Survey vessel.

WILLIAMSBURG (PG-56, ex-*Aras*, 1931). 1,332 tons. Dimensions: 244' x 36' x 15'. Propulsion: Diesels, 2,200 HP. Speed: 16 kts.

BEAUMONT (ex-*Carola*, 1930). 1,108 tons gross. Dimensions: 247' 6" x 34' x 12' 6". Propulsion: Diesel, 1,800 HP.

DAUNTLESS (ex-*Delphine*, 1921). 1,255 tons gross. Dimensions: 257' 6" x 35' 6" x 14' 9". Propulsion: 2 screws, reciprocating engines, 2,900 HP.

HILO (ex-*Moana*, 1931). 1,839 tons gross. Dimensions: 279' x 38' 3" x 18'. Propulsion: Diesel, horsepower unreported. Speed: 17 kts.

SAN BERNARDINO (ex-*Vanda*, 1928). 1,279 tons gross. Dimensions: 240' x 37' x 14' 6". Propulsion: Diesels, two screws, power unreported.

Since the declaration of a national emergency in 1941, the U. S. Navy has acquired scores of private yachts which have been converted for use as escorts. Those above 1,000 tons gross are rated as gunboats (PG); from 500 to 1,000 tons, patrol yachts (PY); and under 500 tons, coastal yachts (PYc), patrol craft (PC or SC) depending on size and whether of wood or steel construction (SCs are wood; PCs, steel; PYcs may be either). Armament and other details of military importance of the PGs above have not been reported. Two ex-yacht PGs, *Niagara* (PG-52, ex-*Hi-Esmaro*) and *Plymouth* (PG-57, ex-*Alva*) have been lost, the former as a PT-boat tender in the Solomons.

18 or more ex-Yachts Rated Patrol Yachts

ISABEL (PY-10, 1917). 710 tons gross. Dimensions: 230' x 26' x 8' 6". Propulsion: Geared turbines, 8,400 SHP. Speed: 26 kts. Armament: 2 3"/50; eight smaller, AA. Taken over from builder during last war and retained in Navy since.

SYLPH (PY-12, ex-*Intrepid*, 1930). 596 tons gross. Dimensions: 205' x 33' 9" x 16'. Propulsion: Diesels, 1,000 HP. Armament: 1 3"; several smaller.

SIREN (PY-13, ex-*Lotusland*, 1929). 662 tons gross. Dimensions: 205' 9" x 28' 3" x 10' 3". Propulsion: Diesel, 1,000 HP.

ARGUS (PY-14, ex-*Haida*, 1929). 704 tons gross. Dimensions: 218' x 30' x 12'. Propulsion: Diesel, 1,500 HP. In peacetime, the *Argus* is with the Coast & Geodetic Survey.

CORAL (PY-15, ex-Yankee Clipper, ex-Stalia, 1914). 726 tons. Dimensions unreported. Propulsion: Diesel, 1,500 HP. Speed: 14.5 kts. Served in last war as U.S.S. *Sialia*, returned to private ownership after armistice; reacquired by U. S. Navy in 1941.

ZIRCON (PY-16, ex-Nakhoda, 1930). 958 tons gross. Dimensions: 196' 6" x 17' x 12'. Propulsion: Diesels, two screws, HP unreported.

JADE (PY-17, ex-Dr. Brinley, 1926). 582 tons gross. Dimensions: 162' 9" x 27' 6" x 13'. Propulsion: Diesels, two screws, 1,600 HP.

TURQUOISE (PY-18, ex-PC-459, ex-Entropy, 1922). 513 tons gross. Dimensions: 172' x 26' x 11'. Propulsion: Diesels, two screws, 700 HP.

CARNELIAN (PY-19, ex-Seventeen, 1930). 502 tons gross. Dimensions: 191' x 26' x 10'. Propulsion: Diesel, no other details reported.

TOURMALINE (PY-20, ex-Sylvia, 1930), RU8Y (PY-21, ex-Placida, 1930). 502 tons gross. Dimensions: 191' x 26' 6" x 10'. Propulsion: Diesels, two screws, 850 HP.

ALMANDITE (ex-Happy Days, 1927). 545 tons. Dimensions: 196' 6" x 27' x 11' 6". Propulsion: Diesel, no other details reported.

AZURLITE (ex-Vagabondia, 1928). 854 tons gross. Dimensions: 182' x 33' 3" x 12'. Propulsion: Diesel, no other details reported.

BERYL (ex-Rene, 1930). 945 tons gross. Dimensions: 234' 9" x 34' 3" x 12'. Propulsion: Diesels, two screws, HP unreported.

CHALCEDONY (ex-Velero III, 1931). 750 tons gross. Dimensions: 195' x 30' x 11' 9". Propulsion: Diesels, two screws, HP unreported.

CRYSTAL (ex-Vida, 1930). 954 tons gross. Dimensions: 234' 9" x 34' 3" x 12'. Propulsion: Diesels, two screws, HP unreported.

GIRASOLE (ex-Girenza, 1926). 535 tons gross. Dimensions: 170' x 27' x 11'.

MARCASITE (ex-Ramsis, 1928). 969 tons gross. Dimensions: 225' x 32' 6" (draft unreported).

Two of the above ex-yachts, *Isabel* and *Coral*, served in the last war, *Isabel* remaining in the Navy afterwards and *Coral* reverting to private ownership, only to be reacquired by the Navy in 1941. *Cythera*, ex-*Agawa*, reported missing in 1942, is the only PY the U. S. lost through October, 1943. Armament of PYs unreported. Many more than are listed here probably have been taken over.

26 or more ex-Yachts Rated Coastal Yachts Photo Page 102

EMERALD (PYc-1, ex-Savitar, 1922). 104 tons gross. Dimensions: 96' x 17' x 7' 6". Propulsion: Gasoline engines, 600 HP. Wood hull.

SAPPHIRE (PYc-2, ex-Buccaneer). 466 tons gross. Dimensions: 155' 3" x 25' 3" x 10'. Propulsion: Diesel, 250 HP.

AMETHYST (PYc-3, ex-Samona II, 1931). 260 tons gross. Dimensions: 146' 9" x 23' 6" x 11'. Propulsion: Diesel, 1,100 HP.

AGATE (PYc-4, ex-Stella Polaris, 1930). 161 tons gross. Dimensions: 110' 6" x 21' x 8' 6". Propulsion: Diesel, 800 HP.

ONYX (PYc-5, ex-Pegasus, 1925). 190 tons gross. Dimensions: 110' 3" x 27' 6" x 8'. Propulsion: Diesels, two screws, 720 HP.

AMBER (PYc-6, ex-Polaris, 1930). 253 tons gross. Dimensions: 120' x 21' 9" x 8' 9". Propulsion: Diesel, 550 HP.

AQUAMARINE (PYc-7, ex-Seawolf, 1925). 183 tons gross. Dimensions: 92' x 16' x 15' 3". Propulsion: Gasoline engines, 600 HP.

OPAL (PYc-8, ex-Coronet, 1928). 495 tons gross. Dimensions: 150' x 27' x 10'. Propulsion: Diesels, two screws, 800 HP.

TOPAZ (PYc-10, ex-Doromar, 1931). 152 tons gross. Dimensions: 111' 9" x 20' x 7'. Propulsion: Diesels, two screws, 600 HP.

ANDRADITE (PYc-11, ex-Caronia, 1927). 296 tons gross. Dimensions: 140' 6" x 23' 6" x 11'. Propulsion: Diesel, 600 HP. A peacetime Coast & Geodetic Survey vessel.

SARDONYX (PYc-12, ex-Queen Anne, 1928). 475 tons gross. Dimensions: 185' 6" x 27' x 19' 6". Propulsion: Diesels, two screws, 750 HP.

JASPER (PYc-13, ex-Stranger, 1928). 297 tons gross. Dimensions: 135' x 23' x 13' 6". Propulsion: Diesels, two screws, 800 HP. Wood hull.

TRUANT (PYc-14, retains civil name, 1918). Length: 118'. Other dimensions unreported. Propulsion: Diesel.

MENTOR (PYc-37, ex-Haida, 1942). No details available. Apparently a new yacht taken over before completion.

ALABASTER (ex-Ronaele, 1932). Tonnage unreported. Dimensions: 148' x 23' x 8'. Propulsion: Diesel.

GARNET (ex-Caritas, 1925). 395 tons gross. Dimensions: 147' x 25' 6" x 9' 6". Propulsion: Diesels, two screws.

JET (ex-Thalia, 1930). 386 tons gross. Dimensions: 160' x 24' 6" x 8' 6". Propulsion: Diesels, two screws.

OLIVIN (ex-Bidou, 1930). 213 tons gross. Dimensions: 124' x 20' x 6' 6". Propulsion: Diesels, two screws.

PERIDOT (ex-Bymar, 1928). 289 tons gross. Dimensions: 144' 6" x 23' x 8'. Propulsion: Diesels, two screws.

PYROPE (ex-Oceania, 1923). 375 tons gross. Dimensions: 156' 4" x 24' 6" x 9' 6". Propulsion: Diesels, two screws.

RHODOLITE (ex-Seapine, 1931). 485 tons gross. Dimensions: 155' x 26' x 10'. Propulsion: Diesels, two screws.

SARD (ex-Navigation). 212 tons gross. No other details reported.

ex-COLLEEN (no new name reported) (1926). 248 tons gross. Dimensions: 150' x 22' 6" x 7' 6". Propulsion: Diesels, two screws.

ex-JAMAROY (no new name reported) (1928). 108 tons gross.

ex-SEAFORTH (no new name reported) (ex-Robador, 1926). 433 tons gross. Dimensions: 160' 9" x 26' 3" x 9' 9". Propulsion: Diesels, two screws.

ex-VAGRANT. Length: 117 feet. No other details reported.

Converted yachts under 500 tons are in most cases rated PYc, although some (see below) are classified as PC or SC. Those named here are only a fraction of the Navy total. Armament has not been disclosed. *Moonstone* (PYc-9, ex-Lone Star) was lost in October, 1943, in a collision in the North Atlantic.

8 Eagle Class

PE-19, 27, 32, 38, 48, 55, 56, 57 (all 1918-19). Standard Displacement: 430 tons. Dimensions: 200' x 25' 6" x 7' 3". Propulsion: Single screw, geared turbine, 2,500 SHP. Speed: 18 kts. Armament: 2 4"/50; 1 3" AA; 2 MG; 12 depth charges.

The PEs are the famous "Eagle" boats built by the Ford Motor Company during the last war. These are the sole survivors of a class that once numbered 112 vessels; most of the others have long since been scrapped.

PCE Type

Photo Page 92

In 1942, the Navy ordered 150 slightly enlarged PC boats, designated PCE and 180 feet in length overall. More may have been ordered at a later date, although contracts for 50 were cancelled in November, 1943, owing to the improvement in the U-boat situation. Thus, at least 90 PCEs are contracted for or under construction. The PCE design was prompted in part by the need for a sturdier vessel than the PC boat in northerly waters. As the P in their designation indicates, the PCEs are steel-hulled. No builders' names, launching dates or other particulars announced.



These...



Down through the years, the old shipbuilding village of Greenport and the surrounding country on Long Island's eastern tip, have contributed much in the construction and maintenance of fine vessels. Sub chasers for World Wars I and II, minesweepers, tank lighter landing boats that put our troops ashore on far away beach heads—the pleasure, commercial and fishing craft of peacetime—old whalers famed in their trade . . . all attest to the skill of Greenport shipwrights which goes from generation to generation.

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PC Boats, Standard Type

Photo Page 92

Albina Engine & Machinery: PC-569-572, 1081 (8/29/42).

Brown: PC-565 (2/27/42), 566 (3/21/42), 567 (4/11/42), 568 (4/25/42), 608 (5/16/42), 609 (5/30/42), 610 (6/19/42), 611 (6/29/42), 1251 (9/10/42).

Consolidated Shipbuilding: PC-484 (1941), 485 (12/20/41), 486 (1/25/42), 487 (2/23/42), 563 (3/17/42), 564 (4/12/42), 600 (5/9/42), 601 (5/23/42), 602 (6/13/42), 603 (6/30/42), 1192 (8/7/42), 1199 (1/2/43), 1208 (9/15/43).

Defoe Boat & Motor: PC-471-479, 480 (10/25/41), 481, 482, 483 (10/25/41), 542-549.

Dravo Corporation: PC-490 (10/18/41), 491-495, 573-577.

George Lawley & Sons: PC-461 (12/23/41), 462 (1/42), 463 (2/27/42), 464 (2/27/42), 465 (3/42), 466 (4/29/42), 469, 470.

Jeffersonville Boat & Machine: PC-559-562.

Leatham Smith: PC-550, 551, 588 (5/3/42).

Luders Marine Construction: PC-556 (6/23/42), 557, 558, 1213 (5/22/43).

Sullivan Drydock & Repair: PC-488 (12/20/41), 489 (12/20/41), 552 (2/13/42), 553 (5/2/42), 554 (5/30/42), 555 (5/30/42), 1233 (1/11/43).

Between December, 1940 and late 1942, the U. S. Navy let several groups of contracts, involving many hundreds of vessels, for submarine chasers of two basic types, known as PC and SC. PCs are steel-hulled, SCs wooden; also, in general, the steel-hulled ships are larger. More than half of the orders were for the PC type. Only the relatively few PCs for which contracts or launching dates have been released are listed here. (In October, 1943, contracts for 50 others were cancelled, owing to Allied gains on the submarine battlefield. There are minor differences among the PCs. PCs numbered between 468 and 577 are 175' x 23' (draft unreported); those above, 173' x 24' (draft again unreported). All displace 335 tons. They are Diesel-powered (2,400 horsepower) and have a maximum speed of 25 knots. Armament consists of light guns on dual purpose mounts and depth charge throwers. PC-467 was lend-leased to the Norwegian Navy in 1942, in which it is now the *Haakon VII*. PC-468 was similarly transferred to the Netherlands; under the Dutch flag, she is the *Konink Wilhelmina*. Six or more PCs have also been lend-leased to Brazil. PC-496 was lost in the Atlantic in the summer of 1943.

1 PC-452 Type

PC-452 (1941), built by Defoe Boat & Motor, is a prototype PC. She differs from the standard vessels mainly in having a length of 174' overall.

1 PC-451 Type

PC-451 (5/23/40), is another prototype PC. Also Defoe-built, she likewise differs in length (170' overall).

4 or more ex-Yachts Rated PC

PC-454 (ex-Arlis, 1915). 103 tons gross. Dimensions: 120' x 16' x 6'. Propulsion: Diesel, 600 HP.

PC-458 (ex-Evelyn R. II, 1923). 164 tons gross. Dimensions: 120' x 20' x 7' 6". Propulsion: Turbine, 450 SHP.

PC-460 (ex-Elda, 1930). 373 tons gross. Dimensions: 153' w.l. x 24' x 8'. Propulsion: Diesels, two screws, 1,500 HP.

PC-509 (ex-Vara, 1928). 356 tons gross. Dimensions: 149' w.l. x 24' x 8'. Propulsion: Diesels, two screws, 1,500 HP.

Present armament of these vessels has not been disclosed. PC-457 (ex-Trouper) was sunk by collision in August, 1941. PC-459 has been renamed *Turquoise* and is now rated PYc, in which section she may be found listed. PC-523 (ex-Edmar) and 510 (ex-Sybarita) have been rerated as district craft and are therefore not listed in this volume. There may be several ex-yacht PCs beyond those named.

PCS Type

In addition to PC and SC types, the U. S. Navy has placed orders for an unstated number (probably not very large) of submarine chasers of intermediate size, designated as the PCS type. PCS hulls are identical with those of the YMS coastal minesweepers, and PCS units may simply be minesweepers with anti-submarine instead of their usual armament. The PCS vessels displace about 250 tons; dimensions, 135' 6" x 24' (draft as sub chasers unknown). They are Diesel-powered (horsepower possibly increased above YMS' 1,200). Builders, launch dates, speed, armament unannounced.

SC Boats, Standard Type

American Cruiser: SC-511, 512.

Annapolis Yacht: SC-521, 522.

Delaware Bay Shipbuilding: SC-648 (4/18/42), 649 (4/18/42), 650 (1942), 651 (1941).

Elizabeth City Shipyard: SC-515-518.

Fisher Boat: SC-453 (5/3/41), 499, 500.

Gulf Marine Ways: SC-1057 (11/11/42).

Harbor Boat Building: SC-722 (5/15/42), 723 (6/42), 724 (7/2/42), 725 (7/23/42).

Julius Petersen: SC-652 (4/13/43), 653 (4/13/43), 738 (6/27/42), 739 (7/4/42), 740 (7/14/42), 741 (8/3/42), 742 (8/17/42), 743 (8/26/42).

Luders Marine Construction: SC-505, 506, 532-535.

Mathis Yacht Building: SC-507, 508, 524-529.

Peterson Boat: SC-536-539.

Quincy Adams Yacht Yard: SC-513, 514, 628 (4/43), 744 (5/23/42), 745 (6/15/42), 746 (7/42), 747 (7/28/42).

Rice Brothers: SC-503 (3/14/42), 504.

Robinson Marine Construction: SC-540, 541.

Seabrook Yacht: SC-501 (1/24/42), 502.

Shelburne Harbor Shipyard: SC-1029 (8/26/42), 1030 (8/26/42).

Vineyard Shipbuilding: SC-519, 520.

Walter E. Abrams Shipyard: SC-672 (5/2/42), 673-677, 678 (8/17/42).

Westergard Boat: SC-497, 498, 530, 531.

SCs are wooden-hulled sub chasers (S is the Navy designation for wooden patrol craft). The dimensions of standard SCs such as the above, of which many more have been ordered, are 110' x 18' x 6' and displacement, 100 tons. (Contracts for twelve SCs were cancelled in October, 1943, as the U-boat threat subsided.) SCs were originally designated PCs, like steel sub chasers, the present classification being adopted in 1942. SCs are Diesel-powered (1,200 HP) and have a maximum speed of more than 20 knots. They are armed with a 3" dual purpose gun, smaller guns and depth charge throwers. SC-694 and 696 were lost in the Mediterranean in September, 1941.

2 SC-449 Type

SC-449 (5/14/40), 450 (3/14/40), built by Luders Marine Construction and American Car & Foundry respectively. Prototype SCs, they are identical with later models except for lower horsepower and speed of only 17 knots.

2 ex-Yachts Rated SC

SC-455 (ex-Katoura, 1930). 105 tons gross. Dimensions: 96' x 16' 6" x 5'. Propulsion: Two gasoline motors, 850 HP. Wood hull.

SC-456 (ex-Onwego, 1931). 194 tons gross. Dimensions: 110' w.l. x 22' x 6' 6". Propulsion: Diesels, two screws, 600 HP.

12 SCs, World War Type

Photo Page 92

SC 64, 102, 185, 229, 231, 330, 412, 428, 431, 432, 437, 440 (1917-19). Built by various yards. Standard Displacement: 75 tons. Dimensions: 110' x 14' 9" x 5' 6". Propulsion: Three screws, three gasoline motors, 660 HP. Speed: 17 kts. Armament: 1 3"/23; MG; DCT. Wood hull.

These craft are the survivors of the famous fleet of "ashcan carriers" the U. S. built to fight the U-boat menace in the last war.

12 STC Type

STC-1 (1/3/41), STC-2 (1/11/41), STC-3 (1/20/41), STC-4 (1/25/41), STC-5 (2/1/41), STC-6 (2/8/41), STC-7 (2/15/41), STC-8 (2/21/41), STC-9 (3/3/41), STC-10 (3/5/41), STC-11 (3/41), STC-12 (3/41). Built by Electric Boat Co. Dimensions: 70' x 20' x 4'. Wood hulls. Other details unreported.

The STCs (originally known as PTCs, but changed when the Navy adopted the S designation for wooden craft) are apparently PT boats with anti-submarine instead of torpedo armament. Twenty-four more (PTC-13-36) were to have been built, but they were completed as PT-33-44 and 57-68. Evidently STC-1-12 were an experiment that failed.

UNITED STATES - SUBMARINES

No. 285 and Beyond

Submarines of the 285-and-beyond group will probably prove to be improved Albacores (themselves improved versions of the 1,525-ton surface displacement G class of 1939-40). Some among 120 reported already ordered:

Cramp: DRAGONET (4/18/43); ESCOLAR (4/18/43); BATFISH (5/43); DEVILFISH (5/31/43); HACKLEBACK (5/31/43); LANCEFISH (8/10/43); LING (8/10/43); BURRFISH (8/18/43); LIONFISH (11/7/43); MANTA (11/7/43).

Electric Boat: PERCH (second vessel of name, replacing lost vessel; 9/12/43); SHARK (replaces submarine of same name lost 1942; 10/17/43); BARBEL (11/15/43).

Manitowoc Shipbuilding: HAMMERHEAD.

Mare Island Navy Yard: SKATE (3/4/43).

Portsmouth Navy Yard: BILLFISH (11/13/42); BOWFIN (12/7/42); CISCO (12/24/42); CABRILLA (12/24/42); SEA HORSE (1/9/43); CREVELLE (2/22/43); ASPRO (4/7/43); ARCHER FISH (5/29/43); SAND LANCE (6/27/43); PARCHE (7/25/43); BANG (8/30/43); PILOTFISH (8/30/43); PLAICE (11/15/43).

Builder Uncertain: CAPELIN (1/43).

45 "Repeat Albacore" Class

Electric Boat: ANGLER, 240 (7/4/43); BASHAW, 241 (7/25/43); BLUEGILL, 242 (8/43); BREEM, 243 (10/17/43); CAVALLA, 244 (11/15/43); COBIA, 245 (11/28/43); CROAKER, 246; DACE, 247 (5/43); FLASHER, 249 (6/20/43); FLIER, 250 (7/16/43); FLOUNDER, 251 (8/23/43); GA8ILAN, 252 (9/19/43); GUNNEL, 253 (5/15/42); GURNARD, 254 (6/8/42); HADDO, 255 (6/21/42); HAKE, 256 (7/42); HARDER, 257 (8/19/42); HOE, 258 (9/17/42); JACK, 259 (10/16/42); LAPON, 260 (10/27/42); MINGO, 261 (11/30/42); MUSKALLONGE, 262 (12/13/42); PADDIE, 263 (12/30/42); PARGO, 264 (1/24/43).

Manitowoc Shipbuilding: PETO, 265 (4/30/42); POGY, 266 (6/22/42); POMPON, 267; PUFFER, 268 (11/12/42); RASHER, 269; RATON, 270; RAY, 271; REDFIN, 272; ROBALO, 273; ROCK, 274.

Mare Island Navy Yard: SUNFISH, 281 (5/2/42); TUNNY, 282 (6/1/42); TINOSA, 283 (10/8/42); TULLIEE, 284 (11/11/42).

Portsmouth Navy Yard: SAWFISH, 276 (6/23/42); SCAMP, 277 (7/20/42); SCORPION, 278 (7/20/42); SNOOK, 279 (8/15/42); STEELHEAD, 280 (1943).

Standard displacement: 1,525 tons, surface; submerged unreported. Dimensions: 307' x 27' x 14'.

Propulsion: Diesels and electric motors. Diesel SHP, 6,500. Surface speed: 21 kts.

Armament: 10 21" TT, six bow and four stern. 1 3" AA, 2 M. G.

The "repeat Albacores," like the Albacores, are virtually duplicates of the G class of 1940. The specifications given here, in fact, are taken from published specifications of the 1940 G's; no data has been published on the Albacores or later submarines themselves. Subs built by the Manitowoc Co., which is at Manitowoc, Wis. on Lake Michigan, reach the open sea via the Mississippi, down which they travel on pontoons.

21 Albacore Class

Photo Page 88

Electric Boat: ALBACORE, 218 (2/17/42); BARB, 220 (4/2/42); BLACKFISH, 221 (4/18/42); BLUEFISH, 222 (2/43); BONEFISH, 223 (3/7/43); COD, 224 (3/21/43); CERO, 225 (5/43); CORVINA, 226; DARTER, 227 (6/8/43).

Mare Island Navy Yard: SILVERSIDES, 236 (8/26/41); TRIGGER, 237 (10/22/41); WHALE, 239 (3/14/42).

Portsmouth Navy Yard: DRUM, 228 (5/12/41); FLYING FISH, 229 (7/9/41); FINBACK, 230 (8/25/41); HADDOCK, 231 (10/20/41); HALIBUT, 232 (12/3/41); HERRING, 233 (1/15/42); KINGFISH, 234 (3/2/42); SHAD, 235 (4/24/42).

Standard displacement: 1,525 tons, surface; submerged, unreported. Dimensions: 307' x 27' x 14'.

Propulsion: Diesels and electric motors. Diesel SHP, 6,500. Surface speed: 21 kts.

Armament: 10 21" TT, six bow and four stern. 1 3"/50 DP. 2 MG.

The Albacores were ordered in 1940. The *Amberjack*, No. 219, was lost in 1943. All units of the class have probably been completed. One, the late *Wahoo*, which achieved the unusual feat of wiping out an entire Japanese convoy by itself during 1942, was an Albacore.

5 G Class of 1940

Electric Boat: GATO, 212 (8/21/41); GREENLING, 213 (9/20/41); GROUPE, 214 (10/27/41); GROWLER, 215 (12/22/41); GUARDFISH, 217 (1/20/42).

Standard Displacement: 1,525 tons, surface; submerged unreported. Dimensions: 307' x 27' x 14'.

Propulsion: Diesels and electric motors. Diesel SHP, 6,500. Surface speed: 21 kts.

Armament: 10 21" TT, six bow and four stern. 1 3"/50 DP. 2 MG.

In submarines of this type, the U. S. has one of the outstanding types of long-range subs. They do not possess some of the special equipment characteristic of German submarines; on the other hand, they have exceptional range and are able to stay at sea for long periods and to operate thousands of miles from base, on the Japanese side of the Pacific. The *Grunion*, No. 216, missing since 1943, was a G-of-1940.

3 G Class of 1939

Electric Boat: GAR, 206 (11/7/40); GRAYBACK, 208 (1/31/41).

Mare Island Navy Yard: GUDGEON, 211 (1/25/41).

Standard Displacement: Surface, 1,475 or 1,525 tons (probably former); submerged unreported. Dimensions: 299' (possibly 307') x 27' x 14'.

Propulsion: Diesel-electric and electric motors. Diesel-electric SHP, 6,400. Surface speed: 21 kts.

Armament: 10 21" TT, six bow and four stern. 1 3"/50 DP. 2 MG.

The Gs of 1939 are generally understood to be "repeat Tambors." The missing *Grampus*, *Grayling* and *Grenadier* were of this class. Note the rounded pressure hull in photos of late type U. S. submarines.

2 M Class

Photo Page 87

Electric Boat: MACKEREL, 204 (9/28/40).

Portsmouth Navy Yard: MARLIN, 205 (1/29/41).

Standard Displacement: Surface, 800 tons. Submerged unreported. Dimensions: 253' x 21' 6" x 12'.

Propulsion: Diesels and electric motors. Diesel SHP, 1,600. Speed: 16 kts., surface; 11, submerged.

Armament: 6 21" TT, four bow and two stern. 1 3"/50 DP. 2 MG.

The *Marlin* and *Mackerel*, the smallest submarines built in the U. S. since the last war, are experimental types. How successful they are considered is unknown. However, they do not compare too favorably with late German U-boats of the same general size. The Nazi vessels are considerably faster on the surface, carry a much heavier gun armament, in some cases appear to carry a heavier torpedo armament as well, can dive deeper and appear to have a number of other special protective features which are not duplicated in the American boats. On the other hand, the U. S. Navy has paid little attention to submarines below the minimum size—probably some 1400 tons—necessary for trans-Pacific cruising.

5 T Class

Photo Page 85

Electric Boat: TAMBOR, 198 (12/20/39); TAUTOG, 199 (1/27/40); THRESHER, 200 (3/27/40).

Mare Island Navy Yard: TUNA, 203 (10/2/40).

Portsmouth Navy Yard: TROUT, 202 (5/21/40).

Standard Displacement: Surface, 1,475 tons; submerged unreported. Dimensions: 299' x 27' x 14'.

Propulsion: Diesel-electric and electric motors. Diesel-electric SHP, 6,400. Speed: 21 kts., surface; 9, submerged.

Armament: 10 21" TT, six bow and four stern. 1 3"/50 DP. 2 MG.

Although the T class' displacement is the same, it differs considerably in hull shape and layout from the S class of 1936-7 listed below. The *Triton*, No. 201, missing 1943, was of this type.

9 S Class of 1936-37

Photo Page 84

Electric Boat: SARGO, 188 (6/6/38); SAURY, 189 (8/20/38); SPEARFISH, 190 (10/29/38); SEADRAGON, 194 (4/21/39).

Mare Island Navy Yard: SWORDFISH, 193 (4/1/39).

Portsmouth Navy Yard: SCULPIN, 191 (7/27/38); SAILFISH, 192 (ex-*Squalus*, 9/14/38); SEARAVEN, 196 (6/21/39); SEAWOLF, 197 (8/17/39).

Standard Displacement: Surface, 1,475; submerged unreported. Dimensions: 310' x 27' x 13' 9".

Propulsion: Diesels and electric motors. Diesel SHP, 6,140. Speed: 20 kts., surface; 9, submerged.

Armament: 8 21" TT, four bow and four stern. 1 3"/50 DP. 1 MG.

The *Sailfish* is the former *Squalus*, rebuilt and recommissioned in 1940 after foundering off Portsmouth on her trials in 1939. The rescue of 33 of her crew and her subsequent raising from a depth of 240 feet are among the most remarkable rescue and salvage operations in history. Instrumental in the rescue was the diving bell, invented by Commander Francis McCann, USN, there used for the first time. The bell was operated by the U. S. submarine rescue vessel *Falcon*. The *Sailfish* has served effectively since Pearl Harbor. One S-of-1936-7 submarine, *Sealion*, was destroyed at Cavite in 1941 to prevent her falling into enemy hands.

6 S Class of 1935

Photo Pages 84, 86

Electric Boat: SALMON, 182 (6/12/37); SEAL, 183 (8/25/37); SKIPJACK, 184 (10/23/37).

Mare Island Navy Yard: STURGEON, 187 (3/15/38).

Portsmouth Navy Yard: SNAPPER, 185 (8/24/37); STINGRAY, 186 (6/10/37).

Standard Displacement: Surface, 1,450 tons; submerged, 2,198. Dimensions: 298' w.l. x 26' x 14' 3".

Propulsion: Diesels and electric motors. Diesel SHP, unreported. Speed: 20 kts., surface; 9, submerged.

Armament: 8 21" TT, four bow and four stern. 1 3"/50 DP. 1 MG.

The S class of 1935 is an enlarged edition of the P class of 1934, with two more torpedo tubes.

4 P Class of 1934

Photo Page 85

Electric Boat: PERMIT, 178 (ex-*Pinna*, 10/5/36).

Mare Island Navy Yard: POMPAÑO, 181 (3/11/37).

Portsmouth Navy Yard: PLUNGER, 179 (7/8/36); POLLACK, 180 (9/15/36).

Standard Displacement: Surface, 1,330 tons; submerged, 1,998. Dimensions: 300' 6" x 25' 1" x 13' 10".

Propulsion: Diesels and electric motors. Diesel SHP, unreported. Speed: 20 kts., surface; 9, submerged.

Armament: 6 21" TT, four bow and two stern. 1 3"/50 DP. 1 MG.

The *Perch* and *Pickrel*, both of this class, were lost in 1942 and 1943 respectively.

1 Tarpon Class

Electric Boat: TARPON, 175 (9/4/35).

Standard Displacement: Surface, 1,315 tons; submerged, 1,968. Dimensions: 298' x 25' 1" x 13' 10".

Propulsion: Diesels and electric motors. Diesel SHP, unreported. Speed: 20 kts., surface; 9, submerged.

Armament: 6 21" TT, four bow and two stern. 1 3"/50 DP. 1 MG.

The *Tarpon* is (and the *Shark* was) practically identical with the *Pike* and *Porpoise*.

2 P Class of 1933

Photo Page 87

Portsmouth Navy Yard: PORPOISE, 172 (6/20/35); PIKE, 173 (9/12/35).

Standard Displacement: Surface, 1,310 tons; submerged, 1,934. Dimensions: 301' x 24' 11" x 13' 1".

Propulsion: Diesels and electric motors. Diesel SHP, unreported. Speed: 20 kts., surface; 9, submerged.

Armament: 6 21" TT, four bow and two stern. 1 3"/50 DP. 1 MG.

2 C Class

Photo Page 85

Electric Boat: CUTTLEFISH, 171 (ex-V-9, 11/21/33).

Portsmouth Navy Yard: CACHALOT, 170 (ex-V-8, 10/19/33).

Standard Displacement: Surface, 1,120 tons (*Cuttlefish*), 1,110 (*Cachalot*); submerged, 1,650. Dimensions: 271' 9" x 24' 9" x 12' 10".

Propulsion: Diesels and electric motors. Diesel SHP, 3,400; electric motors, 800. Speed: 17 kts., surface; 9, submerged.

Armament: 6 21" TT, four bow and two stern. 1 3"/50 DP.

The *Cuttlefish* and *Cachalot* are all-welded, the first such U. S. submarines, and established a precedent which is still followed in the U. S.

1 D Class

Photo Page 86

Portsmouth Navy Yard: DOLPHIN, 169 (ex-V-7, 3/8/32).

Standard Displacement: Surface, 1,540 tons; submerged, 2,215. Dimensions: 319' x 27' 10" x 13' 1".

Propulsion: Diesels and electric motors. Diesel SHP, 4,200; electric motors, 875. Speed: 17 kts., surface; 8, submerged.

Armament: 6 21" TT, four bow and two stern. 1 4"/50.

The *Dolphin* also carries three torpedoes stowed externally.

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everything will be blasted out, while inside is a blaze of light, with the need of engines starting up, the hum of the lifts and the banging of caterpillar tracks—and the traffic lights are shining from red to amber and amber to green. The deep hum of the exhaust fans can be heard as thousands of cubic feet of fuel fumes are sucked out into the air. If these fumes ever stopped, the soldiers working below would be dead in a few minutes."



2 N Class

Photo Page 88

Mare Island Navy Yard: NAUTILUS, 168 (ex-V-6, 3/15/30).

Portsmouth Navy Yard: NARWHAL, 167 (ex-V-5, 12/17/29).

Standard Displacement: Surface, 2,730 tons; submerged, 3,960. Dimensions: 371' x 33' 9" x 15' 9".

Propulsion: Diesels and electric motors. Diesel SHP, unreported. Electric motors, 2,540. Speed: Surface, unreported; 8.5 kts., submerged.

Armament: 6 21" TT, four bow and two stern. 2 6"/53.

The *Norwhol* and *Nautilus* are the two largest U. S. submarines, and were exceeded in size only by the late U. S. minelaying submarine, *Argonaut* (only minelaying submersible in U. S. Navy; missing, 1943), and by the late Free French *Surcouf*. The *Norwhol* and *Nautilus* were re-engined in 1940. With their earlier Diesels, they were unable to attain the designed surface speed of 17 knots.

3 B Class

Photo Page 84

Portsmouth Navy Yard: BARRACUDA, 163 (ex-V-1, 7/17/24); BASS, 164 (ex-V-2, 12/27/24); BONITA, 165 (ex-V-3, 6/9/25).

Standard Displacement: Surface, 2,000 tons; submerged, 2,506. Dimensions: 341' 5" x 27' 1" x 14' 7".

Propulsion: Diesels and electric motors. Diesel SHP, 6,700; electric motors, 2,400. Speed: 18 kts., surface; 8, submerged.

Armament: 6 21" TT, four bow and two stern. (Carries 16 torpedoes altogether), 1 3"/50 DP (Bass); 1 5"/53 (others).

The *Barracuda*, *Bonita* and *Bass* have the unusual feature of a coupling which enables them to use some of their Diesels to drive the electric motors and thus provide an electric drive for surface cruising. These are the first large submarines to be built in the U. S.

1 1,000-ton S Class of 1916-18

Lake Torpedo Boat: S-48, 159. Launched 1921.

Standard Displacement: Surface, 1,000 tons; submerged, 1,458. Dimensions: 267' x 21' 10" x 13' 6".

Propulsion: Diesels and electric motors. Diesel SHP, 2,000; electric motors, 750. Speed: 14.5 kts., surface; 11, submerged.

Armament: 5 21" TT, five bow and one stern (14 torpedoes carried). 1 4"/50.

The S-48 is a sistership of the S-51, lost in an accident off Block Island, Sept. 25, 1925. The S-48 was re-engined in 1938.

6 850-ton S Class of 1916-18

Bethlehem, Quincy: S-42, 153; S-43, 154; S-44, 155; S-45, 156; S-46, 157; S-47, 158. Launched 1923-4.

Standard Displacement: Surface, 850 tons; submerged, 1,126. Dimensions: 225' 3" x 20' 6" x 15' 3".

Propulsion: Diesels and electric motors. Diesel SHP, 1,200; electric motors, 1,500. Speed: 14.5 kts., surface; 11, submerged.

Armament: 4 21" TT, all bow (12 torpedoes carried). 1 4"/50.

7 790-ton S Class of 1916-18

Photo Page 86

Portsmouth Navy Yard: S-11, 116; S-12, 117; S-13, 118. Launched 1918-20.

Lake Torpedo Boat: S-14, 119; S-15, 120; S-16, 121; S-17, 122. Launched 1918-20.

Standard Displacement: Surface, 790 tons; submerged, 1,092. Dimensions: 231' x 21' 10" x 13' 1" (S-11-13) 13' (others).

Propulsion: Diesels and electric motors. Diesel SHP, 2,000; electric motors, 1,200. Speed: 15 kts., surface; 10.5, submerged.

Armament: 4 21" TT, all bow (12 torpedoes carried). 1 4"/50.

The S-4 of this type was sunk by collision and salvaged in one of the greatest underwater dramas in naval history (1927-8). She was then used for sub-sea safety studies, but was finally scrapped in 1936. As with other S-class "pig boats," these are now used mainly for training.

22 800-ton S Class of 1916-18

Bethlehem, Quincy: S-1, 105; S-18, 123; S-20, 125; S-21, 126; S-22, 127; S-23, 128; S-24, 129; S-27, 132; S-28, 133; S-20, 134. Launched 1918-22.

Bethlehem, San Francisco: S-30, 135; S-31, 136; S-32, 137; S-33, 138; S-34, 139; S-35, 140; S-36, 141; S-37, 142; S-38, 143; S-39, 144; S-40, 145; S-41, 146. Launched 1918-22.

Standard Displacement: Surface, 800 tons; submerged, 1,062. Dimensions: 219' 3" x 20' 6" x 15' 1".

Propulsion: Diesels and electric motors. Diesel SHP, 1,200; electric motors, 1,500. Speed: 14.5 kts., surface; 11, submerged.

Armament: 4 21" TT, all bow (12 torpedoes carried). 1 4"/50.

The old S class submarines, of which there are four types, were developed by the U. S. Navy in an effort to find a submarine type capable of operating with the fleet. None of these, however, proved successful, one obstacle being their lack of sufficient surface speed. The S-26 of the 800-ton type was wrecked off Panama in January, 1942. The S-25 was lend-leased to Poland, in whose navy she became the *Jastrzad*; she was subsequently lost. The S-20 has been used for experiments in sub-sea safety. The S-1 was fitted in 1923 to carry a small seaplane in a water-tight hangar astern of the conning tower. S class vessels are now used mainly for inshore patrol and training.

17 R Class

Photo Page 88

Bethlehem, Quincy: R-1, 78; R-2, 79; R-4, 81; R-5, 82; R-6, 83; R-7, 84; R-9, 86; R-10, 87; R-11, 88; R-13, 90; R-14, 91. Launched 1917-19.

Standard Displacement: Surface, 530 tons; submerged, 680. Dimensions: 186' x 17' 6" x 13' 8".

Propulsion: Diesels and electric motors. Diesel SHP, 880; electric motors, 925. Speed: 13.5 kts., surface; 10.5, submerged.

Armament: 4 21" TT. 1 3"/50.

All but five of the R class submarines listed above were out of commission from 1930 to 1940, when they were refitted and recommissioned for training purposes. R-3 of same type lend-leased to Britain, now P-511. R-12 lost in accident, June, 1943.

7 O Class

Photo Pages 83, 87

Bethlehem, Quincy: O-3, 64; O-4, 65; O-6, 67; O-7, 68; O-8, 69; O-10, 71. Launched 1917-18.

Puget Sound Navy Yard: O-2, 63. Launched 1917.

Standard Displacement: Surface, 480 tons; submerged, 624. Dimensions: 172' 4" x 17' 6" x 13' 3".

Propulsion: Diesels and electric motors. Diesel SHP, 880; electric motors, 740. Speed: 14 kts., surface; 10, submerged.

Armament: 4 21" TT. 1 3"/23 AA.

Like the bulk of the R type, the O class was decommissioned for 10 years, was refitted and recommissioned in 1940-41 when expansion of the Navy strained submarine training facilities. O-9 foundered off Portsmouth two days before Germany invaded Russia. O-5 wrecked, 1923. O-1 used as experimental vessel and scrapped, 1937.

UNITED STATES - AUXILIARIES AND SPECIAL TYPES

LANDING CRAFT

Landing operations—putting arms and men ashore on hostile coasts—have played a more prominent part in the present war than in any previous war in history. They bulk large both in scale and importance, especially in the campaigns the U. S. and Britain have fought. The Anglo-American occupation of North Africa, for example, involved putting half a million men ashore in a period of hours at widely separated points. Such operations require ships in thousand

lots. Moreover, the majority must be of specialized design to permit navigation in shallow, obstructed waters; easy unloading on beaches or whatever other objectives must be attacked; further, they must be well armed to protect themselves as well as to join in general support of whatever action is taking place. Accordingly, American and other shipyards have been called upon to turn out unprecedented numbers of wholly unfamiliar types.

At the end of 1943, as the second front in Europe drew near, landing craft had the highest priority rating of any arms in the American war program. The actual current output of landing craft is, of course, highly restricted, as are most details of their design and use. However, the Navy itself reported that between July 1, 1940 and Sept. 20, 1943, 12,964 landing craft aggregating 610,781 tons and costing more than \$1,000,000,000 had been completed. Virtually all of this was post-Pearl Harbor; between July 1, 1940 and the end of 1941, landing ship completions aggregated only 7,000 tons. In the first six months of 1942, under an overriding priority ordered by President Roosevelt, completions rose above the previous six months by over 300 per cent, to 10,000 tons; in the second half, the increase skyrocketed to 2600 per cent, 218,000 tons being completed. The increase continued during the first half of 1943, total landing craft tonnage completed in the six-month period surpassing 375,000 tons. During the last half of the year, however, landing ship completions were expected to drop slightly (as indicated by a drop in "construction-in-place" in the first half of the year) for reasons which are far from clear in view of the extension of Allied amphibious operations. However, under the renewed overriding priority, the beginning of 1944 was expected to see them rise steeply once more. These figures do not include landing craft constructed under extensive War Department contracts.

Landing craft are normally assigned a tail-end position in naval annuals or none at all because in the past such craft have been nothing but small boats and barges, self-propelled or otherwise. The craft evolved, particularly by American designers, fall into anything but such categories. At least three are ocean-going types, and all are as much combatant vessels as any of the more familiar naval craft. More ammunition has been fired from their decks and cockpits than from all American and British battleships and cruisers, and perhaps destroyers, together. (Needless to say, all landing craft possible are armed). The editors of NAVY YEAR-BOOK therefore classify them at the head of naval auxiliaries and special types.

In general, initial landings on enemy shores are made by shock troops in the smallest and most maneuverable landing craft. As they secure a hold, they are followed by ever heavier vessels, bringing up larger reinforcements and heavier equipment until finally, with the capture of a port with adequate docking facilities, the need for specialized landing craft in that area disappears altogether. Landing craft built to U. S. Navy order are, of course, going to our allies under lend-lease in large quantities. Navy landing craft are often operated by Coast Guard personnel, the most skilled American inshore and small vessel sailors. Army landing craft will be found listed under "Army's Navy." There are doubtless many modifications of each of the classes listed below.

LSD Class

Land Ship, Dock, is not properly a landing ship, but a self-propelled dock designed to be run up on a beach and serve in the unloading of cargo ships until the troops who have preceded the LSD have captured a suitably equipped port. LSDs are the largest landing craft, 450' in length. No other information on them has been released.

LST Class

Photo Page 104

Landing Ship, Tanks, is next to largest type of built-for-the-purpose landing craft. Length, about 300'; displacement, over 2,000 tons. Diesel-powered ocean-going vessels, with "clam shell" bow which opens for extension of ramp down which mechanized cargo rolls under own power. Also have facilities for debarking infantry.

LST-1, 19, 35, 41 and 44, among others, were built by the Dravo Corporation at Pittsburgh.

LCT Class

Photo Page 103

Landing Craft, Tanks, for landing tanks and heavy transport. Vessels are able to cross the ocean under their own power, length about 200', beam, 35'. Powered by twin Diesels. Capable of carrying heaviest equipment. Equipped with either apron or "clam shell" bow, with extendible ramp built inside. LCTs were pressed into service for carrying many smaller landing craft overseas.

LCI Class

Photo Page 103

Landing Craft, Infantry, comparable to LCT, but with facilities for debarking troops overside with great speed. Powered by twin Diesels. Smaller than LCTs.

LCM Class

Landing Craft, Mechanized, for landing mechanized equipment such as a tank or a half-track. Length, about 50' x 14' (draft unreported). Powered by twin internal combustion engines. Has apron bow.

LCVP Class

Landing Craft, Vehicles and Personnel, probably a somewhat larger type. May also have special equipment for speedy debarking of personnel. Powered by twin internal combustion engines.

LCV Class

Landing Craft, Vehicles, for landing jeeps and the like. Presumably of approximately 40' x 50' length, with apron-bow which opens down into ramp for driving vehicle or vehicles off. Powered by twin internal combustion engines.

LCC Class

Landing Craft, Control, for directors of operations, presumably with special communication facilities.

LCS Class

Landing Craft, Support, presumably small armed vessels for covering operations of other landing craft with automatic weapons fire. Dimensions, about 40' x 10' (draft unreported). Propelled by internal combustion engines.

LCP Class

Landing Craft, Personnel, for landing personnel, are 36' 10" x 11' (draft unreported). Propulsion: Twin 50 HP internal combustion engines.

LCA Class

Landing Craft, Assault, presumably for the use of shock troops, are 41' 6" in length, 10' in beam and are powered by twin 65 HP internal combustion engines.

Higgins Boats

Among the smallest American landing craft are several types of craft incorporating the essential features of Andrew J. Higgins' Eureka boats, many, of course, manufactured by Higgins himself. In 1941, it was reported that Eureka boats were to become the standard small boats aboard American warships. The Eureka design's essential features: bow carved by profiling lathe from a single log (instead of built up from planks and stem), enabling the boat to ride head on into obstructions which would destroy most vessels; an auxiliary maneuvering rudder permitting the boat to turn in little more than its own length; an anti-cavitation tunnel which increases propeller traction by keeping air bubbles out of water flowing through the propellers; a heavy, metal-shod keel running below propellers and rudders. As a result, Higgins boats have a breathtaking ability to deal with obstructions; they simply ride over most of them at high speed. The smallest Eureka boats built by Higgins himself are 36 feet in length and draw less than two feet of water. Thousands are in use. They are generally gasoline-engined; recent photos show them with twin propellers.

LVT Class

LVTs are boat-like vehicles with caterpillar tracks for climbing up and operating on beaches under their own power. Two types are in service, the "alligator" and the "water buffalo." Alligators were first used by the Marines in the U. S. landing on Guadalcanal, Aug. 7, 1942. Water buffaloes are a later version of substantially the same type of vehicle. Both alligators and water buffaloes exist in armored and unarmored versions. The armored types are designated LVT (A). Neither is to be confused with the Army's amphibious trucks ("ducks") which are not tracked. The initials LVT stand simply for Landing Vehicle, Tracked.

LCR Class

Landing Craft, Rubber, are small rubber boats (capacity, six to eight men each), powered by outboard motors. They have been built in immense thousands, of course.

EX-BATTLESHIP RATED AS GUNNERY TRAINER

1 Wyoming Class

WYOMING (5/26/11). Standard Displacement: 19,700 tons. Dimensions: 562' x 93' 1" x 28' 3". Propulsion: Geared turbines, 28,000 designed SHP. Designed speed: 21 kts. (Best pre-war speed: 18 kts.) Armament (as of 1940): 6 12"/50 in twin turrets; 16 5"/51; 8 3" AA; 4 6-pounders.

The *Wyoming* is a sister ship of the *Arkansas* and was demilitarized in 1931 in accordance with the terms of the London Naval Treaty. Her amidships turrets, one after turret and anti-torpedo bulges were removed. Up to 1940, she was employed as a gunnery training vessel. She may now be used as an AA training ship or possibly on auxiliary duties; in either case, it is not unlikely that her demilitarized armament would have been revised. The *Wyoming* was built at the Cramp yard in Philadelphia.

MOTOR TORPEDO BOATS

Photo Pages 89—91

The number of MTBs (designated PT by the Navy) built for the U. S. Navy since the outbreak of war is well in the hundreds. Virtually no details, launching data or identifying numbers, however, have been released. The craft built in quantity appear to fall into four general types: a much modified and reinforced version of the British Power Boat design, by the Electric Boat Company, British Power Boat Co.; the Higgins type, by Higgins Industries, Inc., of New Orleans, incorporating the distinctive Higgins one-piece bow (carved by profiling lathes from single logs) and possibly also incorporating the Higgins maneuvering rudder and shallow-water operation devices; and a design developed by the Huckins Yacht Corporation of Jacksonville, Fla., on which no information has been released; and a Vosper design. The PT-3 design does not seem to have been repeated. The Philadelphia Navy Yard also built an experimental aluminum boat (PT-8) which was apparently unsuccessful and was scrapped. A number of PTs have been sold or lend-leased to Allied navies, notably the British and Dutch, to whom ten to twenty low-number PTs were transferred in 1940 and 1941, and Soviet. Several of the craft listed below have probably been lost. The Navy seldom makes public the identification numbers of PT casualties. Three PTs (3, 69 and 70), used as practice torpedo retrievers, have been re-rated YP-110, 106 and 107 respectively.

Late Electric Boat Co. Type

PT-103 (5/16/42), 131 (8/26/42) and many others. Built by Electric Boat Co. No particulars released, but are doubtless improvements of PT-21 type.

8 PT-95 Group

PT-95-102 (all 1942). Built by Huckins Yacht Corporation. No particulars released, but probably resemble PT-69, also built by Huckins.

24 PT-71 Group

PT-71-94 (all 1942). Built by Higgins Industries, Inc. Are probably modifications of PT-5.

45 PT-21 Group

PT-21-33, 36-40, 42-68 (all 1941-2). Built by Electric Boat Co. Wood. Length, 77'; displacement and other dimensions unreported. Propulsion: Three Packard marine gasoline engines, 4,050 HP. Speed: Over 45 kts. Armament: 4 TT (possibly 21"); several small caliber AC or MG, AA; depth charges.

PT-34, 35 and 41 are among the few U. S. PT boats that have been lost which have been identified as to number. The PT-21 type is based on the British Power Boat (Scott-Paine) design and are essentially improved versions of an Elco type, the PT-10s, transferred to Great Britain.

1 PT-9 Type

PT-9 (1939). Built by British Power Boat Co., Southampton and shipped to U. S. A. Wood. Displacement unreported. Dimensions: 70' p.p. x 20' x 4'. Propulsion: Three Rolls Royce Merlin engines, 3,300 HP. Speed: 40 kts. Armament: 4 18" TT in fixed mounts; 4 MG AA in twin mounts shielded against spray; depth charges.

1 PT-7 Type

PT-7 (Philadelphia Navy Yard, 1940). Length, 81'. Only other data reported, armament: 2 21" TT, 4 MG AA.

In 1940, the Philadelphia Navy Yard also built an experimental aluminum PT boat, the original PT-8. It has since been scrapped. The current PT-8 is the ex-PT-1.

2 PT-5 Type

PT-5 (1940), PT-6 (1941). Built by Higgins Industries, Inc. Wood. Displacement: 35 tons. Length, 81'; other dimensions unreported. Propulsion: Three marine gasoline engines, 3,750 HP. Speed: 40 kts. Armament: 2 21" TT in fixed mounts; 2 25 mm AA; 8 depth charges.

PT-6 is a repeat number, the original PT-6 being sold to the Royal Navy in 1940. Higgins craft, which embody a considerable number of distinctive features, such as a one-piece bow carved by profiling lathe from a solid "head log," are based on the Higgins company's pre-war preoccupation with the problems of substantial, high speed motor craft able to operate in shallow water. It has, for example, been the leading builder of motorboats for oil and other companies operating in and around the Mississippi bayous and in tropical South America.

3 PT-3 Type

PT-3 and 4 (both 1940). Built by Fisher Boat Works. PT-8 (ex-PT-1, 1939). Built by Miami Shipbuilding. Wood. Displacement: 20 tons. Length, 59'; other dimensions unreported. No machinery details released. Speed: 40 kts. Armament: 2 21" TT in fixed mounts; 2 25 mm AA; depth charges.

A fourth boat of the same type, PT-2, is employed as a practice torpedo retriever and has been re-designated YP-110.

MOTOR GUN BOATS

On Nov. 20, 1943, W. E. John & Associates, Rye, N. Y., launched a 72-foot anti-submarine vessel for lend-lease transfer to Great Britain. She is described as one of a series of such vessels, armed with guns and depth charges, under construction at the John Yard. Some of the others may be retained by the U. S. Navy. They appear to be comparable to the British motor gun boats (MTBs without torpedoes).

MINELAYERS

3 Terror Class

TERROR, CM-5 (6/6/41). Built by Philadelphia Navy Yard. CATSKILL, CM-6 (5/42) and OZARK, CM-7 (6/15/42). Built by Willamette Iron & Steel Corp. Standard Displacement: 6,000 tons. Propulsion: Geared turbines. Speed: 25 kts. Armament: 8 5"/38 in twin gun-houses; possibly several smaller, AA. No other details available.

The *Terror*, *Catskill* and *Ozark* are the first large built-for-the-purpose minelayers in the U. S. Navy. Prior to their commissioning, the only American CMs (cruiser-minelayers) were two old cruisers, the *Baltimore* and *Yosemite* (ex-*San Francisco*), both scrapped in 1937. The U. S. Navy has comparatively few minelayers of any type, since, unlike other countries, American coast defense minelayers are the responsibility of the Army rather than the Navy. (Army minelayers, which the Army calls mine planters, will be found under Army vessels). Most of the Navy's minelayers are designed for duty with the fleet.

4 Tracy Class

Photo Page 94

TRACY, DM-19 (8/12/19). Built by Cramp. PREBLE, DM-20 (3/8/20), SICARD, DM-21 (4/20/20) and PRUITT, DM-22 (8/2/20). Built by Bath Iron Works. Standard Displacement: 1,190 tons. Dimensions: 314' 4" x 30' 8" x 9' 3". Propulsion: Two screws, two sets geared turbines, 27,000 SHP (*Tracy*), 25,200 (others). Speed: 35 kts. Armament: 4 4"/50; 1 3"/23 AA; probably several smaller, AA; details of minelaying equipment and capacity unreported.

The *Tracy* and her sisters are World War I flush-deck destroyers of the 186-347 type (*Tracy*, ex-DD-214; *Preble*, ex-345; *Sicard*, ex-346; *Pruitt*, ex-347), converted to their present duties in 1937, when their twelve torpedo tubes were removed in favor of mine tracks. Former destroyers employed as minelayers are classed DM. Such vessels have been extremely useful in the Pacific, invading Japanese waters many times to lay mines in enemy shipping tracks.

4 Gamble Class

Photo Page 94

GAMBLE, DM-15 (5/11/18); RAMSAY, DM-16 (6/8/18); MONTGOMERY, DM-17 (3/23/18); BREESE, DM-18 (5/11/18). Built by Newport News Shipbuilding. Standard Displacement: 1,090 tons. Dimensions: 314' 4" x 30' 6" x 8' 8". Propulsion: Two screws, two sets geared turbines, 27,000 SHP. Speed: 35 kts. Armament: 4 4"/50; 1 3" AA; probably several smaller, AA; mine capacity unofficially reported as 80 mines.

The Gambles are converted World War I four-stackers of the 75-185 model (*Gamble*, ex-DD-123; *Ramsay*, ex-124; *Montgomery*, ex-121; *Breese*, ex-122). They were remodeled as minecraft in 1920-21, mine tracks replacing their dozen torpedo tubes.

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1 Oglala Class

OGLALA, CM-4 (ex-Shawmut, ex-Massachusetts, 1907). Standard Displacement: 4,200 tons. Dimensions: 386' 7" x 52' 2" x 15' 7". Propulsion: Reciprocating engines, 7,000 HP. Speed: 20 kts. Armament: 1 5"/51; 2 3"/50 AA; mine capacity, 300 mines.

The Oglala was capsized and sunk at Pearl Harbor by Japanese bombs, but the Navy has announced that she is being salvaged. (Data above refer to her equipment prior to sinking). The Oglala began life as the steamship Massachusetts. She was taken over by the Navy in 1917 and renamed the Shawmut. As the Shawmut, she helped lay the great North Sea Mine Barrage of 1917-18, which broke the back of the Kaiser's U-boat fleet. For many years after the war, she served as flagship of U. S. minecraft. A sister ship, Aroostook, was also a minelayer, CM-3. She is now a cargo ship.

COASTAL MINELAYERS

2 Monadnock Class

MONADNOCK, CMc-4 (ex-Cavalier), MIANTONOMOH, CMc-5 (ex-Quaker) (both 1938). Merchant vessels taken over by the Navy in 1941 for conversion into coastal minelayers. 3,056 tons gross. Dimensions: 280' 3" x 48' 8" x 13' 6". Propulsion: Geared turbines, 5,000 SHP. Speed: 17 kts. Armament: 4 5"/38 DP; possibly some smaller, AA.

The Monadnock and Miantonomoh are coastal freighters which used to ply between Philadelphia and Norfolk. Coastal minelayers are designated by the Navy CMc.

1 Wassuc Class

WASSUC, CMc-3 (ex-Yale, 1923). Merchantman, formerly in coastal trade, taken over by Navy in 1941. 1,670 tons gross. Dimensions: 223' 9" x 42' 1" x 14' 1". Propulsion: Two screws, reciprocating engines, 2,080 HP. Speed: 12 kts. Armament: 2 5"/38 DP; possibly some smaller, AA.

FAST MINESWEEPERS

8 Chandler Class

CHANDLER, DMS-9 (3/19/19; builder, Cramp); SOUTHARD, DMS-10 (3/31/19, Cramp); HOVEY, DMS-11 (4/26/19, Cramp); LONG, DMS-12 (4/26/19, Cramp); HOPKINS, DMS-13 (6/26/20, New York Shipbuilding); ZANE, DMS-14 (8/12/19, Mare Island Navy Yard); TREVER, DMS-16 (9/15/20, Mare Island Navy Yard); PERRY, DMS-17 (10/29/21, Mare Island Navy Yard). Standard Displacement: 1,190 tons. Dimensions: 314' 4" x 30' 8" x 9' 3". Propulsion: Two screws, two sets geared turbines, 25,000 SHP. Speed: 35 kts. Present armament restricted.

The Chandlers are former destroyers of the larger World War I flush deck type (185-347), long idle and converted to their present duties in 1940. (Chandler, ex-DD-206; Southard, ex-207; Hovey, ex-208; Long, ex-209; Hopkins, ex-249; Zane, ex-337; Trever, ex-339; Perry, ex-340). Prior to conversion, their armament was that of the standard four-stacker, except for the Hovey and Long, which had 8 4" in twin mounts (double the usual four-stacker main batteries). Post-conversion armament has not been made public, but doubtless includes AA guns and depth charges. Ex-destroyer minesweepers (rated DMS by the Navy) are an extremely useful type, not only better able, because of their greater speed, to perform fleet minesweeping duties than the standard 'sweeper, but also to carry out escort missions. Wasmuth, DMS-15 (ex-DD-338), was lost in December, 1942, in a freak accident in Aleutian waters. Two of her depth charges, wrenched loose in a storm, blew up her stern, compelling her abandonment.

8 Dorsey Class

DORSEY, DMS-1 (4/9/18; builder, Cramp); LAMBERTON, DMS-2 (1918, Newport News); BOGGS, DMS-3 (1918, Mare Island Navy Yard); ELLIOT, DMS-4 (11/30/18, Cramp); PALMER, DMS-5 (1918, Bethlehem, Quincy); HOGAN, DMS-6 (1918, Bethlehem, San Francisco); HOWARD, DMS-7 (1918, Bethlehem, San Francisco); STANSBURY, DMS-8 (1918, Bethlehem, San Francisco). Standard Displacement: 1,090 tons (Dorsey, Lamberton, Elliot); 1,060 (others). Dimensions: 314' 4" x 30' 6" x 8' 8". Propulsion: Two screws, two sets geared turbines, 25,000 SHP. Speed: 35 kts. Present armament unreported.

The Dorseys are also 1940 conversions of World War I flush deckers, however, of the earlier type (75-185 group). (Dorsey, ex-DD-117; Lamberton, ex-119; Boggs, ex-136; Elliot, ex-146; Palmer, ex-161; Hogan, ex-178; Howard, ex-179; Stansbury, ex-180). As in the case of the Chandler group, however, no details of their equipment as minesweepers have been made public. For many years Dorsey, Lamberton, Boggs and Elliot served as mobile target units, Lamberton and Boggs being completely disarmed. Others were laid up.

MINESWEEPERS

"Repeat" Ravens and Adroits

In November, 1941, the Navy ordered an unstated number of minesweepers beyond those listed below, and has ordered more since. These appear to be "repeats" of both the Raven and Adroit types. Which is which, in the case of the few published names (listed below), is not known. Some (perhaps from among those named) may have been lend-leased to Allied navies.

DEXTROUS (1/17/43); NOTABLE (6/12/43); OPPONENT (6/12/43); NUCLEUS (6/26/43); PALISADE (6/26/43); PERIL (7/25/43); PHANTOM (7/25/43); MARVEL (7/31/43).

39 Raven Class

American Shipbuilding: SEER, AM-112 (5/42); STAFF, AM-114; SPEED, AM-116 (4/42); STRIVE, AM-117 (4/42); STEADY, AM-118; SUSTAIN, AM-119 (6/23/42).

Defoe Boat & Motor: 8ROADBILL, AM-58; CHICKADEE, AM-59; NUTHATCH, AM-60; PHEASANT, AM-61.

General Engineering & Dry Dock: SHELDRAKE, AM-62; SKYLARK, AM-63; STARLING, AM-64 (4/11/42); SWALLOW, AM-65 (5/6/42); HEED, AM-100; HERALD, AM-101; MOTIVE, AM-102 (8/17/42); ORACLE, AM-103 (9/30/42).

Gulf Shipbuilding: TOKEN, AM-126 (3/28/42); TUMULT, AM-127 (4/19/42); VELOCITY, AM-128 (4/19/42); ZEAL, AM-131 (9/5/42).

John H. Mathis: SWAY, AM-120; SWERVE, AM-121; SWIFT, AM-122.

Norfolk Navy Yard: RAVEN, AM-55 (8/24/40); OSPREY, AM-56 (8/24/40); AUK, AM-57 (1942).

Pennsylvania Shipyard: PILOT, AM-104; PIONEER, AM-105; PORTENT, AM-106 (8/16/42); PREVAIL, AM-107 (9/13/42).

Savannah Machine & Foundry: SYMBOL, AM-123 (7/2/42); THREAT, AM-124; TIDE, AM-125.

Winslow Marine: PURSUIT, AM-108; REQUISITE, AM-109; RIGHT, AM-110; SAGE, AM-111.

Standard Displacement: 700 tons. Length, 220'; other dimensions unreported. Propulsion: Two screws, two sets Diesels with electric drive, 2,000 HP. Speed: 18 kts. Armament: 2 5"/38; possibly some smaller, AA.

The Ravens, the largest built-for-the-purpose minesweepers currently under construction in the U. S., are considerably longer, but displace somewhat less than the British Bangors. Trim two-stackers, two have already been lost in action (Sentinel, AM-113, and Skill, AM-115). Two have also been transferred to Great Britain under lend-lease (Vital, AM-129, now H. M. S. Strenuous, and Usage, AM-130, now H. M. S. Tourmaline); some of the vessels listed above may likewise have been lend-leased to our allies. U. S. minesweepers are traditionally named after birds; about midway through the list of minesweeper contracts of 1940, however, the Navy exhausted the supply of bird names and turned to "quality" names. Ocean-going, steel-hulled minesweepers are classified AM.

26 Adroit Class

Commercial Iron: ADROIT, AM-82; ADVENT, AM-83; ANNOY, AM-84 (4/6/42); CONFLICT, AM-85; CONSTANT, AM-86; DARING, AM-87; DASH, AM-88.

Dravo: DESPITE, AM-89; DIRECT, AM-90; DYNAMIC, AM-91; EFFECTIVE, AM-92; ENGAGE, AM-93.

Irving Jakobson Shipyard: EXCEL, AM-94 (5/10/42); EXPLOIT, AM-95 (3/5/42).

Nashville Bridge: FIDELITY, AM-96; FIERCE, AM-97.

Penn-Jersey: FIRM, AM-98; FORCE, AM-99.

Tampa Shipbuilding: ALARM, ALCHEMY, APEX, ARCADE, ARCH, ARMADA (all 12/7/42); CRAIG, CRUISE (both 3/21/43). (No classification numbers for these vessels reported.) Standard Displacement: 335 tons. Length, 165' w.l. Diesel engines. No other data released.

The hulls of the Adroits, one of the two main types of ocean-going minesweepers in current American construction programs, are substantially identical with those of the PC-boats (although whether of 173' or 175' o.a. PC is not clear). All named above have been completed, notwithstanding absence of launch dates.

19 or more Converted Trawlers

Photo Page 95

BULLFINCH, AM-66 (ex-Villanova) and CARDINAL, AM-67 (ex-Jeanne d'Arc) (both 1937, 262 tons gross, 735 HP); CATBIRD, AM-68 (ex-Bittern) and CURLEW, AM-69 (ex-Kittiwake) (both 1937, 355 tons gross, 575 HP); FLICKER, AM-70 (ex-Delaware, 1937, 303 tons gross, 735 HP); ALBATROSS, AM-71 (ex-Illinois) and BLUEBIRD, AM-72 (ex-Maine) (both 1931, 256 tons gross, 550 HP); GRACKLE, AM-73 (ex-Notre Dame, 1929, 255 tons gross, 500 HP); GULL, AM-74 (ex-Boston College, 1928, 241 tons gross, 400 HP); KITE, AM-75 (ex-Holy Cross) and LINNET, AM-76 (ex-Georgetown) (both 1928, 229 tons gross, 400 HP); GOLD-FINCH, AM-77 (ex-Fordham, 1929, 255 tons gross, 500 HP); GOSHAWK, AM-79 (ex-AMc-4, ex-Penobscot, 1919, 522 tons gross, 450 HP); GOLDCREST, AM-80 (ex-Shawmut) and CHAFFINCH, AM-81 (ex-Trimount) (both 1928, 235 tons gross, 380 HP); MERGANSER (ex-Ocean), EAGLE (ex-Wave), HAWK (ex-Gale) and IBIS (ex-Tide) (all 1937-8, 320 tons gross, 650 HP).

During 1941, the Navy took over 15 (the first vessels on list) Diesel-powered deep-sea trawlers for conversion to minesweepers. Four more (the last four) and possibly others were acquired in 1942. Their armament as sweepers, of course, is unreported. They are all giving excellent service. Goshawk (AM-79) was formerly rated as a coastal minesweeper. AMc-4, AM-78 (missing on above list) is the Road Runner, now AMc-35.

21 Owl Class

Alabama Shipbuilding: WHIPPOORWILL, AM-35 (1919).

Baltimore Dry Dock: BOBOLINK, AM-20 (1919); LARK, AM-21 (1919).

Chester Shipbuilding: TURKEY, AM-13 (1918); WOODCOCK, AM-14 (1919); PARTRIDGE, AM-16 (1919).

Gas Engine & Power: SEAGULL, AM-30 (1919); TERN, AM-31 (1919).

Philadelphia Navy Yard: VIREO, AM-52 (1919); WARBLER, AM-53 (1919); WILLET, AM-54 (1919).

Puget Sound Navy Yard: KINGFISHER, AM-25 (1918); RAIL, AM-26 (1918).

Pusey & Jones: EIDER, AM-17 (1919).

Staten Island Shipbuilding (now Bethlehem): ORIOLE, AM-7 (1918); GREBE, AM-43 (1919); PEACOCK, AM-46 (1919).

Sun Shipbuilding: BRANT, AM-24 (1918).

Todd, Brooklyn: OWL, AM-2 (1918); ROBIN, AM-3 (1918); CORMORANT, AM-40 (1919).

Standard Displacement: 840 tons. Dimensions: 187' 10" x 35' 5" x 8' 10". Propulsion: Single screw, reciprocating engine, 1,400 HP. Speed: 14 kts. Armament: 2 3"/50 AA; possibly some smaller, AA.

Next to the converted four-stack destroyers, the Owls are the largest American minesweepers. They were built during the last war for the specific purpose of helping to clear the great North Sea Mine Barrage, which closed the northern exit from the North Sea to German submarines. Many of them actually saw service in that huge sweeping operation (there were over 70,000 mines in the barrage). Originally, there were 49 Owls. Four were scrapped before the war; five have been lost (*Tanager*, *Finch*, *Quail*, *Penguin* and *Bittern*); and 19 were converted to seaplane tenders, submarine rescue vessels or salvage craft (of the 19, three have been lost) and can be found in their respective categories. Several of the 21 that remain as minesweepers—they can lay as well as sweep mines—have given an extraordinarily good account of themselves in the Pacific and Far Eastern war. *Lark* and *Whippoorwill* are among the few American warships to survive the dreadful 1942 campaign in the Java Sea.

COASTAL MINESWEEPERS

Photo Page 96

Over 200 YMS Type

Al Larson Boat Shop: YMS-86 (2/42) and one other.

American Car & Foundry: one launched 9/7/42 and three others.

Associated Shipbuilders: six.

Astoria Marine Construction: YMS-100 (4/12/42) and three others.

Ballard Marine Ways: four.

Barbour Boat: two.

Bellingham Marine Railway Co.: four.

Burger Boat: six.

Dachel Carter Shipbuilding: two.

Frank L. Sample, Jr., Inc.: three.

Gibbs Gas Engine Co.: twelve.

Grebe & Co.: two.

Greenport Basin & Construction: YMS-20 (11/1/41), 21 (11/42), 22 (12/42), 23 (12/31/41), 24 (1/10/42), 25 (1/28/42), 26 (2/28/42), 27 (3/42), 28 (3/21/42), 29 (4/10/42), 30 (4/42), 31 (5/23/42), 184 (7/18/42), 185 (8/8/42), 186 (8/42), 187 (9/7/42), 188 (9/26/42), 193 (1/2/43) and at least six others (total, twenty-four or more).

Harbor Boat Building: YMS-117 (8/23/42), 118, 119, 120 (4/4/42).

Henry B. Nevins, Inc.: YMS-1 (1/10/42), 2 (1/28/42), 3 (4/13/42), 4 (1942), 5 (4/13/42) and at least six others (total, eleven or more).

Herreshoff Manufacturing: YMS-18 (12/6/41), 19 (1942).

Kruse & Banks Shipbuilding: four.

Lake Union Dry Dock & Machine: six.

Maine Shipyards: four.

Martinez Shipbuilding: YMS-125 (12/18/41) and three others.

Miltebrant Dry Dock: six.

Noank Shipbuilding: three.

Rice Brothers: YMS-12 (3/14/42) and five others.

Robert Jacob, Inc.: YMS-38 (1941), 39 (12/23/41), 40 (1942), 41 (4/14/42), 362 (5/22/43) and others.

San Diego Marine Construction: YMS-113 (2/13/42) and three others.

Seattle Ship Building & Dry Dock: six.

South Coast Co.: YMS-91 (3/7/42) and five others.

Stadium Yacht Basin: eight.

Stephens Brothers: six.

Sullivan Dry Dock & Repair: eight.

Tacoma Boat Building: YMS-129 (12/19/41), 130 (12/18/41) and two others.

Weaver Shipyards: YMS-248 (10/25/42), 254 (2/43) and at least eight others.

Western Boat Building: YMS-133 (12/18/41) and two others.

Wheeler Shipbuilding: YMS-42 (3/17/42), 50 (6/6/42), 51 (6/22/42), 52 (7/14/42), 53 (1942) and at least seven others (total, twelve or more).

Standard Displacement: 260 tons. Dimensions: 135' 6" x 24' x 6'. Propulsion: Two Diesels, 1,200 HP. Other details unreported.

YMS boats are large wooden, Diesel-powered minesweepers designed for inshore clearing and patrol work. The design was worked out by the Henry Nevins yard at City Island, recipient of an initial contract for eleven of the craft. YMS hulls are identical with hulls of the PCS type of intermediate-sized sub chaser. A number of the vessels listed above are understood to have been turned over to the Royal Navy (which classes them as 8YMS) under lend-lease.

16 105-Foot Type

AMc-113-128. Length, 105'. Propulsion: Diesels. Hulls, wood. No other particulars available.

AMc-113 and fifteen sisters were ordered Dec. 1, 1941. They are understood to be identical with the Canadian 105-foot type of coastal minesweeper. Presumably they were completed in 1942-3.

70 Accentor Class

Photo Page 95

Anderson & Cristofani: PRESTIGE, AMc-97 (1941); PROGRESS, AMc-98 (1941); RADIANT, AMc-99 (1941); RELIABLE, AMc-100 (11/1/41); ROCKET, AMc-101; ROYAL, AMc-102.

Bristol Yacht: CARACARA, AMc-40 (5/41); CHACHALACA, AMc-41 (6/41); ASSERTIVE, AMc-65 (1941); AVENGE, AMc-66 (1941); BOLD, AMc-67 (2/14/42).

Camden Shipbuilding: GOVERNOR, AMc-82 (7/41); GUIDE, AMc-83 (9/20/41).

Delaware Bay Shipbuilding: PARAMOUNT, AMc-92 (1941); PEERLESS, AMc-93 (9/6/41).

East Coast Yard: PLUCK, AMc-94; POSITIVE, AMc-95; POWER, AMc-96.

Fulton: INDUSTRY, AMc-86 (1941); LIBERATOR, AMc-87 (1941); LOYALTY, AMc-88 (1941); MEMORABLE, AMc-89; MERIT, AMc-90; OBSERVER, AMc-91.

Gibbs Gas Engine: CHIMANGO, AMc-42 (3/8/41); COTINGA, AMc-43 (3/25/41); COURLAN, AMc-44 (4/4/41); DEVELIN, AMc-45 (4/41); DEMAND, AMc-74 (5/41); DETECTOR, AMc-75 (5/41); DOMINANT, AMc-76 (6/41); ENDURANCE, AMc-77 (6/41).

Greenport Basin & Construction: FULMAR, AMc-46 (2/25/41); JACKAMAR, AMc-47 (3/10/41); LIMPkin, AMc-48 (4/5/41); LORIKEET, AMc-49 (4/41); ACME, AMc-61 (5/41); ADAMANT, AMc-62 (6/41); ADVANCE, AMc-63 (6/41); AGGRESSOR, AMc-64 (7/41).

Harry G. Marr: SECURITY, AMc-103; SKIPPER, AMc-104 (1/16/42).

Herreshoff Manufacturing: MARABOUT, AMc-50 (2/41); OSTRICH, AMc-51 (3/29/41); COURIER, AMc-72 (5/41); DEFIANCE, AMc-73 (6/41).

Hodgson Brothers, Goudy & Stevens: BULWARK, AMc-68 (1941); COMBAT, AMc-69 (1941).

Snow Shipyards: ROLLER, AMc-52 (5/41); SKIMMER, AMc-53 (6/41); TAPACOLA, AMc-54 (1941); TURACO, AMc-55 (1941); STALWART, AMc-105 (1941); SUMMIT, AMc-106 (1941); TRIDENT, AMc-107 (10/8/41); VALOR, AMc-108 (1941); VICTOR, AMc-109 (12/6/41); VIGOR, AMc-110.

W. A. Robinson: ACCENTOR, AMc-36 (1941); BATELEUR, AMc-37 (1941); BARBET, AMc-38 (1941); BRAMBLING, AMc-39 (1941); ENERGY, AMc-78; EXULTANT, AMc-79; FEARLESS, AMc-80; FORTITUDE, AMc-81.

Warren Boat Yard: HEROIC, AMc-84 (1941); IDEAL, AMc-85 (9/20/41).

Warren Fish Co.: CONQUEROR, AMc-70 (8/20/41); CONQUEST, AMc-71 (1941).

The Accentors are Diesel-powered minesweepers ordered in 1941 (additional units may also have been ordered later). The only information the Navy has released concerning them is their length, 97' 6", and the fact (indicated by their designation as AMc) that they are of wooden construction. The 70 were ordered in two groups, the first, those with bird names, and the second, with "quality" names. The two groups have slightly different pilot houses and sweeping gear.

39 Converted Dragger and Seiners

PIBIT, AMc-1 (ex-Spartan, 1936, 126 tons gross, 275 HP); MAGPIE, AMc-2 (ex-City of San Pedro, 1936, 122 tons gross, 275 HP); PLOVER, AMc-3 (ex-Sea Rover, 1936, 117 tons gross, 230 HP); KESTREL, AMc-5 (ex-Chanco, 1938, 99 tons gross, 260 HP); HEATH HEN, AMc-6 (ex-Nareen, 1936, 99 tons gross, 230 HP); BUNTING, AMc-7 (ex-Vagabond, 1935, 115 tons gross, 235 HP); COCKATOO, AMc-8 (ex-Vashon, 1936, 131 tons gross, 240 HP); CROSSBILL, AMc-9 (ex-North Star, 1937, 115 tons gross, 260 HP); LONGSPUR, AMc-10 (ex-New Ambassador, 1935, 107 tons gross, 150 HP); SANDERLING, AMc-11 (ex-New Conte di Savoia, 1937, 94 tons gross, 240 HP); GROUSE, AMc-12 (ex-New Bol, 1938, 127 tons gross,

350 HP); HORNBILL, AMc-13 (ex-J. A. Martinloch, 1938, 103 tons gross, 200 HP); CONDOR, AMc-14 (ex-New Example, 1937, 98 tons gross, 200 HP); WAXBILL, AMc-15 (ex-Leslie J. Fulton, 1937, 126 tons gross, 300 HP); CHATTERER, AMc-16 (ex-Sea Breeze, 1936, 112 tons gross, 230 HP); PINTAIL, AMc-17 (ex-Three Star, 1937, 126 tons gross, 300 HP); NIGHTINGALE, AMc-18 (ex-Majestic, 1934, 93 tons gross, 180 HP); GROSBEAK, AMc-19 (ex-Del Rio, 1935, 110 tons gross, 300 HP); CROW, AMc-20 (ex-Jadran, 1935, 104 tons gross, 180 HP); KILDEER, AMc-21 (ex-Vindicator, 1930, 162 tons gross, 275 HP); FLAMINGO, AMc-22 (ex-Harriet N. Eldredge, 1940, 90 tons gross, 180 HP); BLUE JAY, AMc-23 (ex-Charles S. Ashley, 1936, 91 tons gross, 180 HP); EGRET, AMc-24 (ex-Julia Eleanor, 1937, 110 tons gross, 230 HP); CANARY, AMc-25 (ex-John G. Murley, 1939, 91 tons gross, 180 HP); HUMMING BIRD, AMc-26 (ex-Whaling City, 1936, 89 tons gross, 180 HP); FRIGATE BIRD, AMc-27 (ex-Star of San Pedro, 1935, 112 tons gross, 190 HP); MOCKING BIRD, AMc-28 (ex-Rio Douro, 1936, 98 tons gross, 230 HP); PUFFIN, AMc-29 (ex-Mary Jane, 1936, 107 tons gross, 250 HP); REED BIRD, AMc-30 (ex-Fearless, 1935, 127 tons gross, 250 HP); COURSER, AMc-32 (ex-Nancy Rose, 1938, 86 tons gross, 260 HP); FIRECREST, AMc-33 (ex-S. G. Giuseppe, 1937, 92 tons gross, 180 HP); PARRAKEET, AMc-34 (ex-Jackie Sue, 1934, 90 tons gross, 180 HP); ROAD RUNNER, AMc-35 (ex-AM-78, ex-Treasure Island, 1939, 108 tons gross, 200 HP); KING BIRD, AMc-56, (ex-Gov. Saltanstill, 1940, 104 tons gross, 250 HP); PHOEBE, AMc-57 (ex-Western Robin, 1941, 170 tons gross, 400 HP); RHEA, AMc-58 (ex-Martinloch hull No. 250, 1941); RUFF, AMc-59 (ex-Martinloch hull No. 251, 1941); AGILE, AMc-111 (ex-Breskovich hull No. 3, 1941); AFFRAY, AMc-112 (ex-Tacoma Boat Hull No. 36, 1941).

In 1941-2, the Navy took over 39 or more draggers and purse seiners, the last five while still under construction, for conversion into coastal minesweepers. Former fishing vessels have also been requisitioned or bought in large numbers for other war purposes, some of them originally taken over for coastal minesweeping but since reclassified (AMc-4 now AM-79; AMc-31, *Marin*, now a net tender; *Chanticleer*, AMc-60, now a lighter). Most of the converted AMc's are West Coast tuna fishing craft.

HARBOR MINESWEEPERS

The Navy has among its units an unstated number of very small ex-fishing vessels converted into harbor minesweepers (classified AMb). Most are too small to bear names.

REPAIR SHIPS

1 Andromeda Class

ANDROMEDA (12/22/42), 7,100 tons gross. Former merchant hull, built by Federal Shipbuilding. No other details available.

4 Vulcan Class

Photo Page 100

Los Angeles Shipbuilding: AJAX, AR-6 (8/22/42); HECTOR, AR-7 (11/11/42); JASON, AR-8 or ARH-1 (1943).

New York Shipbuilding: VULCAN, AR-5 (12/14/40).

Standard Displacement: 9,000 tons. No other dimensions announced. Propulsion: Geared turbines. Speed: 16 kts. Armament: 4 5"/38 DP.

The *Vulcan* and her sisters are the finest and most complete sea-going workshops ever built, able to carry out any repairs except those requiring docking of the vessel. *Jason*, the latest of the group, is even able to effect extensive hull repairs, as witness her alternative rating of ARH-1 (AR for auxiliary, repair; H for hull).

1 Medusa Class

Photo Page 99

MEDUSA, AR-1 (4/16/23). Built by Puget Sound Navy Yard. Standard Displacement: 8,125 tons. Dimensions: 483' 10" x 70' 3" x 15' 5". Propulsion: Geared turbines, 7,000 SHP. Speed: 16 kts. Armament (possibly since modified): 4 5"/51; 2 3" AA; 2 6-pounder; several MG.

The *Medusa*, which was one of the first ships designed to execute permanent as well as temporary repairs at sea, includes in her equipment two eight-ton derricks, one 20-ton, one 10-ton and two eight-ton shear legs. A hospital section is also included aboard ship.



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2 Prometheus Class

PROMETHEUS, AR-3 (ex-Ontario, AC-1, built by Mare Island Navy Yard, 1908); VESTAL, AR-4 (ex-Erie, AC-2, New York Navy Yard, 1908). Standard Displacement: 6,625 tons. Dimensions: 465' 9" x 60' 2" x 15' 3". Propulsion: Reciprocating engines, 7,500 HP. Speed: 16 kts. Armament: 4 5"/51; 1 3" AA; several MG.

The *Prometheus* and *Vestal* are former colliers, converted to their present functions in the middle 'twenties. Engines of both were modernized in 1937. *Vestal* was damaged at Pearl Harbor. Their armament has probably since been modernized, too.

DESTROYER TENDERS

6 Piedmont Class

Federal Shipbuilding: APPALACHIAN, AD-20 (1/29/43); BLUE RIDGE, AD-21 (3/7/43); ROCKY MOUNTAIN, AD-22 (3/7/43).

Tampa Shipbuilding: PIEDMONT, AD-17 (12/7/42); SIERRA, AD-18 (1943); YOSEMITE, AD-19.

Specifications unreported, but generally similar to *Dixie*.

2 Dixie Class

Photo Page 99

DIXIE, AD-14 (5/27/39); PRAIRIE, AD-15 (12/9/39). Built by New York Shipbuilding. Standard Displacement: 9,450 tons. Dimensions: 520' x 73' 4" x 25'. Propulsion: Geared turbines, 8,000 SHP. Speed: 16.5 kts. Armament: 4 5"/38 DP; 2 3"/50 AA; several smaller AA.

Dixie, *Prairie* and each of the new ADs listed above serve as mobile bases to 18 new-type destroyers, four four-boat divisions and two leaders. *Dixie* was last reported assigned to the Pacific fleet. All ADs are fitted as flagships.

1 Cascade Class

CASCADE, AD-16 (6/7/42). Former Maritime Commission C-3SA-1 type hull, built by Western Pipe & Steel, completed as destroyer tender. Standard Displacement: 7,459 tons. Dimensions: 492' x 69' 6" x 28' 6". Propulsion: Geared turbines, 6,500 SHP. Speed: 16.5 kts. Armament: 4 5"/38 DP, several smaller, AA.

2 Dobbin Class

DOBBIN, AD-3 (Philadelphia Navy Yard, 5/5/21); WHITNEY, AD-4 (Boston Navy Yard, 10/12/23). Displacement: 8,325 tons. Dimensions: 483' 10" x 61' x 17' 2". Propulsion: Geared turbines, one screw, 7,000 SHP. Speed: 16 kts. Armament: 8 5"/51; 4 3" AA; 2 6-pounder. Also 2 21" TT for torpedo testing purposes.

Dobbin and *Whitney* are similar to the *Holland*, submarine tender built at the same time.

2 Altair Class

ALTAIR, AD-11 (ex-S.S. *Edisto*); DENEbola, AD-12 (ex-S.S. *Edgewood*). Both built by Skinner & Eddy, Seattle, 1919, and acquired by Navy in mid-'twenties. Displacement: 6,250 tons. Dimensions: 423' 9" x 54' 3" x 13'. Propulsion: Geared turbines, 2,500 SHP. Speed: 10.5 kts. Armament: 4 5"/51; 4 3" AA; 2 6-pounder.

Rigel, a third ship of this type, likewise employed by the Navy as a destroyer tender (AD-13), has been re-rated a mobile base tender and receiving ship (ARB-1).

1 Melville Class

MELVILLE, AD-2 (1915). Built by New York Shipbuilding. Displacement: 5,250 tons. Dimensions: 417' 3" x 54' 4" x 15' 10". Propulsion: Geared turbines, 4,000 SHP. Speed: 15 kts. Armament: 8 5"/51; 1 3" AA; 2 3-pounder. 1 18" TT for testing (possibly removed as 18" torpedoes are no longer employed by U. S. Navy).

1 Blackhawk Type

BLACKHAWK, AD-9 (ex-S.S. *Santa Cotelina*, 1913). Built by Cramp, taken over by Navy in 1917. Displacement: 5,600 tons. Dimensions: 420' 2" x 53' 10" x 13' 1". Propulsion: Reciprocating engines, 3,400 HP. Speed: 12.5 kts. Armament: 4 5"/51; 2 3-pounder; 2 1-pounder.

SUBMARINE TENDERS

7 Fulton Class

Mare Island Navy Yard: FULTON, AS-11 (12/17/40); SPERRY, AS-12 (12/17/41); BUSHNELL, AS-15 (9/14/42); HOWARD W. GILMORE, AS-16 (ex-*Neptune*, 1943).

Moore Dry Dock, Oakland: ORION, AS-18 (10/14/42); PROTEUS, AS-19 (11/12/42).

Puget Sound Navy Yard: NEREUS, AS-17.

Displacement: 9,250 tons. Dimensions unreported. Propulsion: Diesels with electric drive, 12,000 HP. Speed: 20 kts. Armament: 4 5"/38; several smaller, AA.

With the exception of the *Holland*, the *Fultons* are our first built-for-the-purpose submarine tenders. Few details have been released. Photos show, however, that they carry the standard U. S. Navy auxiliary armament of four 5"/38 guns, and the unusual feature of a stern anchor. Submarine tenders normally mother a squadron of 18 undersea craft, providing torpedoes, food, stores, fuel from oversize bunkers, comfortable quarters and recreation facilities for crews and facilities for making repairs. All submarine tenders are equipped as flagships. *Howard W. Gilmore* was renamed from *Neptune* to honor a Navy commander who ordered his submarine to crash dive to escape pursuit although he lay helpless outside her conning tower hatch.

1 Ex-C-1 Type

OTUS, AS-20 (ex-S.S. *Fred Morris*, 11/2/40). Former Maritime Commission C-1. Displacement: 6,750 tons. Dimensions: 416' x 60' x 27' 6". Propulsion: Diesel, 4,000 HP. Speed: 14 kts. Armament: 4 5"/38 DP; several smaller, AA.

2 Ex-C-3 Type

Photo Page 99

GRIFFIN, AS-13 (ex-*Mormacpenn*, 11/10/39); PELIAS, AS-14 (ex-*Mormacyork*, 11/14/39). Acquired 1940 and 1941 respectively. 7,886 tons gross. Dimensions: 492' x 69' 6" x 28' 6". Propulsion: Diesels, 8,500 HP. Speed: 16.5 kts. Armament: 4 5"/38 DP; several smaller, AA.

1 Antaeus Class

ANTAEUS, AS-21 (ex-S.S. *St. John*, 1932). 6,185 tons gross as merchantman. Dimensions: 387' 5" x 61' 2" x 27'. Propulsion: Two screws, two sets geared turbines, 11,000 SHP. Speed: 20 kts. Armament: 4 5"/38 DP; several smaller, AA.

1 Holland Class

HOLLAND, AS-3 (Puget Sound Navy Yard, 4/12/26). Standard Displacement: 8,100 tons. Dimensions: 513' 1" x 61' x 16' 9". Propulsion: One screw, one set geared turbines, 7,000 SHP. Speed: 16 kts. Armament: 8 5"/51; 4 3" AA; 2 6-pounder; 1 21" TT submerged, for testing purposes. Generally similar to *Whitney* and *Dobbin*, destroyer tenders.

Of older U. S. submarine tenders, *Canopus* (AS-9) was destroyed at Cavite to prevent enemy capture; *Argonne*, AS-10, is now AG-31, among miscellaneous auxiliaries; and *Camden*, AS-6, is now unclassified.

1 Beaver Class

BEAVER, AS-5 (Built by Newport News Shipbuilding, 1910). Former merchant vessel, acquired by Navy in 1918. Standard Displacement: 4,670 tons. Dimensions: 380' x 47' 2" x 16'. Propulsion: Reciprocating engines, 4,500 HP. Speed: 16.5 kts. Armament: 4 5"/51; 2 1-pounder.

SUBMARINE RESCUE VESSELS

5 Chanticleer Class

CHANTICLEER, ASR-7 (6/42); COUCAL, ASR-8 (6/42); FLORIKAN, ASR-9 (6/14/42); GREENLET, ASR-10 (7/12/42); MACAW, ASR-11 (7/12/42). All built by Moore Drydock, Oakland, Calif. Standard Displacement: 2,000 tons. Propulsion: Diesel. No other data released.

Chanticleer and her sisters are the first built-for-the-purpose American submarine rescue vessels. Presumably they resemble tugs and are equipped with such standard submarine rescue equipment as the McCann diving bell which functioned so brilliantly when the *Squalus* went down.

5 Bird Class

WIDGEON, ASR-1 (ex-AM-22, 1918); FALCON, ASR-2 (ex-AM-28, 1918); CHEWINK, ASR-3 (ex-AM-39, 1918); MALLARD, ASR-4 (ex-AM-44, 1918); ORTOLAN, ASR-5 (ex-AM-45, 1919). Standard Displacement: 1,200 tons. Dimensions: 187' 10" x 36' 10". Draft as submarine rescue vessels unreported. Propulsion: Reciprocating engines, 1,400 HP. Speed: 14 kts. Armament: 2 3"/50 AA; possibly some smaller.

The Widgeon group are former minesweepers converted to their present duties by the addition of heavy air compressors, powerful pumps and diving bell apparatus, increasing previous displacement by about 400 tons. *Falcon's* diving bell rescued the 33 survivors of the *Squalus* disaster. ASRs are attached to the principal submarine stations. *Pigeon*, ASR-6, ex-AM-47, was sunk off Corregidor in 1942 to prevent enemy capture.

MOTOR TORPEDO BOAT TENDERS

WACHAPREAGUE (7/10/43), WILLOUGHBY (8/21/43). No details reported.

NETLAYERS

4 Monitor Class

MONITOR, AN-1; MONTAUK, AN-2; OSAGE, AN-3; SAUGUS, AN-4. Standard Displacement: 3,500 tons. Propulsion: Diesel. No other particulars announced. Ordered in December, 1940, from Ingalls Shipbuilding, Pascagoula, Miss. No launch dates reported.

The Monitors, which bear the names of famous Civil War Ericsson-type monitors, are understood to resemble the British *Protector*, an open-sea netlayer.

NET (BOOM) TENDERS

32 Tree Class

Photo Page 100

American Shipbuilding: LOCUST, YN-17 (2/1/41); MAHOGANY, YN-18 (2/13/41); MANGO, YN-19 (1941); HACKBERRY, YN-20 (ex-*Maple*, 3/6/41); MIMOSA, YN-21 (1941); MULBERRY, YN-22 (1941); PALM, YN-23 (2/8/41); HAZEL, YN-24 (ex-*Poplar*, 1941); REDWOOD, YN-25 (1941); ROSEWOOD, YN-26 (1941); SANDALWOOD, YN-27 (3/16/41); NUTMEG, YN-28 (ex-*Sycamore*, 1941).

Commercial Iron Works: CATALPA, YN-5; CHESTNUT, YN-6; CINCHONA, YN-7; BUCKEYE, YN-8 (ex-*Cottonwood*), (all 1941).

General Drydock, Alameda: BUCKTHORN, YN-9 (ex-*Dogwood*, 1941); EBONY, YN-10 (1941); EUCALYPTUS, YN-11 (6/30/41); CHINQUAPIN, YN-12 (ex-*Fir*, 1941).

John H. Mathis Co.: TEABERRY, YN-29 (5/24/41); TEAK, YN-30 (1941); PEPPERWOOD, YN-31 (ex-*Walnut*, 8/25/41); YEW, YN-32 (1941).

Lake Washington Shipyards: ALOE, YN-1; ASH, YN-2; BOXWOOD, YN-3 (ex-*Birch*); BUTTERNUT, YN-4 (all 1941).

Marietta Manufacturing Co.: GUM TREE, YN-13; HOLLY, YN-14; ELDER, YN-15 (ex-*Juniper*); LARCH, YN-16 (all 1941).

Displacement: 700 tons. Dimensions vary slightly, but generally 165' x 30' 6" x 16' 6". Propulsion: Diesel-electric. Speed: 14 kts. Armament: 1 3" AA, several MG.

YNs lay boom nets, protecting harbors and fleet anchorages against invasion by enemy submarines. The Tree class bears a general resemblance to the British *Barricades*. Names of nine had to be changed to avoid confusion with Coast Guard vessels.

24 Ex-Trawlers

In 1941-2, the Navy acquired 24 tugs and trawlers for conversion into boom defense vessels (as net tenders are also called). They are designated YN-33 to YN-56. YN-53 is the ex-*Pacific*; others have not been identified. All bear Indian names. In 1941 the Navy also placed in service 18 non-self-propelled barges as boom gate vessels (YNG-1-18).

TARGET SHIP

UTAH, AG-16 (ex-BB-31, 1910). Standard Displacement before disarmament: 21,825 tons. The *Utah* was sunk by Japanese bombs and torpedoes at Pearl Harbor, but is capable of salvage; hence the Navy retains her on the list.

AMMUNITION SHIPS

MAZAMA. Built by Tampa Shipbuilding. No details reported.

4 Ex-Merchant Motorships

LASSEN, AE-3 (ex-*Shooting Star*, 1/1/40); KILAUEA, AE-4 (ex-*Surprise*, 8/6/40); RAINIER, AE-5 (ex-*Rainbow*, 3/1/41); SHASTA, AE-6 (ex-*Comet II*, 1941). Former Maritime Commission C-2 type hulls. Displacement: 7,500 tons. Dimensions: 459' x 63' x 25' 9". Propulsion: Diesels, 6,000 HP. Speed: 15.5 kts. Armament: 4 5"/38 DP; several smaller, AA.

U. S. ammunition ships are generally named after volcanoes; originally the Navy limited the names to live volcanoes, of which, however, there are very few under the American flag. Among them is Kilauea, volcano on island of Maui, which erupted shortly after Pearl Harbor, lighting a huge beacon for any nearby Japs, much to Navy consternation.

2 Pyro Class

Photo Page 96

PYRO, AE-1; NITRO, AE-2 (both Puget Sound Navy Yard, 12/16/19). Standard Displacement: 7,025 tons. Dimensions: 482' 9" x 60' 11" x 14' 9". Propulsion: Two screws, two sets geared turbines, 6,700 SHP. (*Nitro* burns coal, *Pyro* oil). Speed: 13 kts. Armament: 4 5"/51; 2 3" AA. Fitted with plant for cooling and testing powder, also large refrigerator holds for meat storage.

OILERS

In addition to those named, the Navy has taken over a large number of privately-owned tankers as well as tankers built under the war program by the Maritime Commission. The Navy, of course, also has the use, occasional or full as required, of any other tankers necessary to its conduct of military operations. Tankers listed below include only ships publicly announced as being on Navy's own list.

At Least 16 Maritime Commission Type

CHICOPEE (ex-*Trenton*), ESCALANTE (9/29/42), HOUSATONIC (ex-*Albany*), KENNEBEC (ex-*Corsicana*), KERN (9/7/42), LOUISBURG (2/15/43), MERRIMACK (ex-*Caddo*), MILLICOMA (1/21/43); NECHES (second ship of name, replaces tanker lost in 1942); NESHANIC (10/31/42); NEOSHO (replaces tanker lost in Coral Sea, 1942); NIOBRARA (11/28/42); PECOS (named for war-lost tanker); SARANAC (12/21/42); SAUGATUCK (12/7/42); WINOOSKI (ex-*Calusa*, 11/12/41).

Built under Maritime Commission contracts in most cases and assigned to Navy. Vary in details, but following specifications generally correct: 10,200 tons gross; dimensions, 487' 6" x 68' x 28'; propulsion, geared turbines or turbo-electric drive; speed, 18 kts.; armament, 4 5"/38 DP, several smaller. *Chicopee*, *Escalante*, *Housatonic* and *Kennebec*, all launched 1941-2; were originally intended for private operators. These four and *Winoski* may prove to be of somewhat larger Cimarron or Platte type.

6 Cimarron Class

Photo Page 97

CIMARRON, AO-22 (1/7/39); SALAMONIE, AO-26 (ex-*Eso Columbia*, 1939); KASKIA, AO-27 (ex-*Eso Richmond*, 1939); SANTEE, AO-29 (ex-*Seokoy*, 1939); CHENANGO, AO-31 (ex-*Eso New Orleans*, 1/4/39); GUADALUPE, AO-32 (ex-*Eso Raleigh*, 1/26/40). About 11,500 tons gross; *Cimarron*, *Santee* and *Chenango*, 18,276 tons deadweight; others, 18,333 tons. Dimensions: 552' x 75' x 29' 11". Propulsion: Two screws, two sets geared turbines, 13,500 SHP. Speed: 18 kts. Armament: Probably 4 5"/38 and several smaller.

The Cimarrons are six of twelve National Defense Tankers, ordered in 1939 and 1940 to a joint Maritime Commission-Navy design. Of the others, three vary slightly in dimensions and are listed separately; a fourth, *Neosho*, AO-23, was sunk in the Coral Sea; and two others, *Sangamon* and *Suwanee*, have been converted to escort carriers. Two or more additional twin-screw tankers, possibly from the Cimarron group, have also been reported converted to "flat tops." Of the six Cimarrons, *Cimarron* herself was assigned to the Navy immediately on completion. The others were turned over to private operators with the proviso that the Navy would take them over in event of national emergency. See Platte class for additional data.

3 Platte Class

PLATTE, AO-24 (7/8/39); SABINE, AO-25 (ex-*Eso Albany*, 1939); CHEMUNG, AO-30 (ex-*Eso Annapolis*, 9/9/39). About 11,500 tons gross; 18,354 tons deadweight. Dimensions: 547' x 75' x 29' 11". Otherwise as *Cimarron*.

The Plattes are the other three of the National Defense Tankers of 1939. *Platte* was assigned to the Navy on completion; the others were operated by the Standard Oil Co. of New Jersey until requisitioned by the Navy. The *Cimarrons* and *Plattes* have a cargo capacity of more than 6,000,000 gallons, nearly double the capacity of older, slower Navy oilers. On trials, some have exceeded 20 knots.

8 Patoka Class

Photo Page 97

PATOKA, AO-9 (1919); SAPELO, AO-11 (1919); RAMAPO, AO-12 (1919); TRINITY, AO-13 (1920); RAPIDAN, AO-18 (1919); SALINAS, AO-19 (1920); SEPULGA, AO-20 (1920); TIPPE-CANOE, AO-21 (1920). Standard Displacement: 5,375 tons. Dimensions: 477' 10" x 60' 3" x 9' 2". Propulsion: Reciprocating, except *Trinity* and *Tippecanoe*, geared turbines. 2,900 HP. Speed: 10.5 kts. Armament: 2 5"/51; 2 3" AA; several smaller.

The Patoka class tankers, built during the last war for the Shipping Board under Navy supervision, were taken over by the Navy on completion. *Patoka* herself for many years had an experimental dirigible mooring mast built onto her stern (now removed). The Patokas' fuel capacity is 11,145 tons, in addition to their own bunker oil. With full load they displace 16,800 tons, draw 26' 2".

3 Kaweah Class

KAWEAH, AO-15 (1919); LARAMIE, AO-16 (1920); MATTOLE, AO-17 (1920). Standard Displacement: 4,410 tons; full load displacement, 14,450 tons. Dimensions: 446' x 58' 2" x 8' 7" (in standard condition), 25' 6" (full load). Propulsion: Reciprocating engines, 2,800 HP. Speed: 11 kts. Armament: 2 5"/51; 2 3" AA.

1 Brazos Class

BRAZOS, AO-4 (1919). Standard Displacement: 5,400 tons; full load, 14,800. Dimensions: 457' 7" x 56' 3" x 10' 9" (in standard condition), 26' 8" (full load). Propulsion: Reciprocating engines, 5,200 HP. Speed: 14 kts. Armament: 4 5"/51; 2 3" AA.

Brazos is the sole survivor of her group of Boston Navy Yard-built tankers. *Pecos* and *Neches* both fell victim to the enemy in 1942, *Pecos* in the Java Sea with survivors of the destroyed *Langley*. *Brazos*' cargo fuel capacity is 7,850 tons.

2 Maumee Class

MAUMEE, AO-2 (1915); CUYAMA, AO-3 (1916). Standard Displacement: 4,990 tons; full load, 14,500 tons. Dimensions: 457' 7" x 56' 2" x 10' (in standard condition), 26' 2" (full load). Propulsion: *Maumee*, Diesels, 5,000 HP; *Cuyama*, reciprocating engines, 5,200 HP. Speed: 14 kts. Armament: 4 5"/51; 2 3" AA. Fitted with towing winches.

Kanawha, AO-1, another ship of this type and the Navy's first oiler, was sunk by Japanese bombers in the Solomons in the spring of 1943.

GASOLINE TANKERS

5 Patapsco Class

PATAPSCO, AOG-1 (8/18/42); RAPPAHANNOCK, AOG-2 (1942 or '3); RIO GRANDE, AOG-3 (9/23/42); WABASH, AOG-4 (10/28/42); SUSQUEHANNA, AOG-5 (11/23/42). Standard Displacement: 2,300 tons. Dimensions: 310' 9" x 48' 6" x 19' 9" (full load draft). Propulsion: Diesels. Speed: 14 kts. Armament and other details unreported.

The Patapsco's are a new type of naval vessel, made necessary by the use of planes at sea. In addition to these tankers, the Navy also has a number of smaller gasoline tankers for use mainly in harbors and classified YOG.

STORESHIPS

Photo Page 100

In addition to vessels listed, some named among cargo ships may have been classified as storeships (AF), refrigerated cargo vessels for transporting perishable food supplies.

ALDEBARAN, AF-10 (ex-*Staghound*, 6/21/39). Former Maritime Commission C-2. 6,085 tons gross; 9,313 tons deadweight. 459' x 63' x 25' 9". Geared turbines, 6,000 SHP. 15.5 kts. Armament: 4 5"/38 DP; several smaller, AA.

POLARIS, AF-11 (ex-*Danald McKay*, 4/22/39). Former Maritime Commission C-2. 6,200 tons gross; 8,656 tons deadweight. 459' x 63' x 25' 9". Diesels, 6,000 HP. 15.5 kts. Armament: 4 5"/38 DP; several smaller, AA.

MIZAR, AF-12 (ex-*Quirigua*, 1932). Former United Fruit Co. vessel. 6,982 tons gross. 415' 8" x 60' 3" x 24' 1". Turbo-electric drive, 11,000 SHP. 18 kts.

TARAZED, AF-13 (ex-*Chirigui*, 1932). Former United Fruit Co. vessel. 6,963 tons gross. 415' 5" x 60' 3" x 24'. Turbo-electric drive, 10,500 SHP. 18 kts. *Tarazed* and *Mizar* are near sisters.

URANUS, AF-14 (ex-Italian *Maria*, 1926). 6,339 tons gross. 418' x 53' x 25'. Diesel-powered. Other details lacking.

Arctic Class: ARCTIC, AF-7 (ex-*Yamhill*, 1919); SOREAS, AF-8 (ex-*Yaquina*, 1919); YUKON, AF-9 (ex-*Mehanno*, 1920). Shipping Board-built vessels from the last war. Standard Displacement: 4,980 tons. 416' 6" x 53' 2" x 11' 4" (in standard condition), 26' 5" (full load). Geared turbines, 2,800 SHP. 11 kts. Armament: 2 5"/51; 2 3" AA.

BRIDGE, AF-1 (5/18/16). Built by Boston Navy Yard. Standard Displacement: 5,000 tons. 422' 11" x 55' 2" x 13' 7" (in standard condition), 20' 8" (full load). Two screws, two sets reciprocating engines, 4,000 HP. 14 kts. Armament: 4 5"/51; 1 3" AA; 2 3-pounder. *Bridge*, the only Navy-built storeship, has also been used for towing targets.

CARGO-STORES ISSUE SHIPS

Some vessels given below as cargo ships may be cargo-stores issue vessels (AKS).

CASTOR, AKS-1 (ex-*Challenge*, 5/20/39). Former Maritime Commission C-2. 6,085 tons gross; 9,420 tons deadweight. 459' x 63' x 25' 9". Geared turbines, 6,000 SHP. 15.5 kts. Armament: 4 5"/38 DP; several smaller, AA. *Castor*'s sister, *Pollux*, AKS-2, was wrecked in a storm on the Newfoundland coast early in 1942.

CARGO SHIPS

Some of vessels listed as cargo ships may be store or cargo-stores issue ships.

Built for Navy: AQUARIUS (Federal Shipbuilding, 7/23/43); ASA LOTHROP (Penn-Jersey, 5/20/43); CENTAURUS (Federal, 8/43); THUBAN (4/26/43).

Requisitioned vessels: CAPE ALAVA (8/1/40); CAPE FAIRWEATHER (4/11/41); CAPE FLATTERY (9/28/40); IDAHO (6/10/41); OREGON (11/29/40). Maritime Commission vessels assigned to Navy on or before completion. Names—certainly of *Idaho* and *Oregon*—may have been changed; new names unreported.

ALHENA, AK-26 (ex-*Robin Kettering*, 1/18/41); ALUDRA (ex-*Richard March Hoe*, 10/30/42). Requisitioned merchantmen, 7,700 and 7,181 tons gross respectively. 479' 8" x 66' x 29' 2". Geared turbines, 6,300 SHP. 15.5 kts. Armament: 4 5"/38 DP; several smaller, AA.

FOMALHAUT, AK-22 (ex-*Cape Lookout*, 1/25/41). Former Maritime Commission C-1 type. 6,750 tons gross; 7,400 tons deadweight. 416' x 60' x 27' 6". Diesels, 4,000 HP. 14 kts. Armament: 4 5"/38 DP; several smaller, AA.

DELTA, AK-29 (ex-*Hawaiian Packer*, 1941); HAMUL, AK-30 (ex-*Dr. Lykes*, 4/6/40); MARKAB, AK-31 (ex-*Mormacpenn II*, 12/21/40). Requisitioned merchant vessels, of Maritime Commission C-3 type. 9,250 tons gross; 12,600, 12,527 and 12,510 deadweight tons respectively. 490' 3" (*Delta*), 492' (others) x 69' 6" x 28' 6". Geared turbines, 8,500 SHP. 16.5 kts.

ARIES (ex-*Manamef*). No details reported.

PLEIADES (ex-Rumanian *Mangalia*, 1940). 3,600 tons gross. 361' x 51' x 21'. Diesels, 3,200 HP. 13 kts. Acquired when U. S. seized vessels of Axis or Axis-dominated nations.

PEGASUS (ex-Danish *Rita Maersk*, 1940). 1,889 tons gross. 287' 9" x 43' 6" (draft unreported). Reciprocating engines. 13 kts.

ALMAACK, AK-27 (ex-*Executar*, 1940); HERCULES, AK-41 (ex-*Exporter*, 1939). Requisitioned merchant ships, of Maritime Commission C-3E type. 9,902 and 9,514 tons deadweight respectively. 475' x 66' x 29' 2". 8,000 HP. 16.5 kts. Armament: 4 5"/38; several smaller, AA.

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ARCTURUS, AK-18 (ex-Mormachawk, 5/18/39); PROCYON, AK-19 (ex-Sweepstakes, 11/14/40); BELLATRIX, AK-20 (ex-Raven, 1941); ELECTRA, AK-21 (ex-Meteor, 1941); ALCHIBIA, AK-23 (ex-Mormocdove, 1939); ALCYONE, AK-24 (ex-Mormocgull, 1939); ALGO-RA8, AK-25 (ex-Mormocwren, 6/15/39); BETELGEUSE, AK-28 (ex-Mormoclark, 9/18/39). Merchant vessels taken over by Navy, all of Maritime Commission C-2 Diesel type. 6,200 tons gross; first and last four vessels, 8,656 tons deadweight; others, 9,274. 459' x 63' x 25' 9". Single screw, Diesels, 6,000 HP. 15.5 kts. Armament: 4 5"/38 DP; several smaller, AA. *Alchibo*, loaded with a cargo of explosives and gasoline, was struck by three Japanese submarine torpedoes between Nov. 28 and Dec. 7, 1942 and burned for five days. Her crew, which won a unit citation from the President, beached her, put out the fire and sailed her back to San Francisco, where she was repaired. She is now back in service.

MERCURY, AK-42 (ex-Mormactern, ex-Lightning, 7/15/39); JUPITER, AK-43 (ex-Santa Catalina, ex-Flying Cloud, 9/30/39); LIBRA (ex-Jean Lykes, 1941); OBERON (1942); TITANIA (1942). Merchant vessels of Maritime Commission C-2 turbine type, last two taken over before completion. 6,085 tons gross; 9,420 tons deadweight. 459' x 63' x 25' 9". Geared turbines, 6,000 SHP. 15.5 kts. Armament: 4 5"/38 DP; several smaller, AA.

SATURN (ex-German Arauco, 1939). 4,358 tons gross. 398' 3" x 55' 6" (draft unreported). Turbo-electric drive.

GEMINI (ex-Saginaw, ex-Etna, ex-Coperas). 2,153 tons gross. 250' 6" x 43' 6" (draft unreported). Reciprocating engines, 1,650 HP.

AQUILA (ex-Danish Tunis, 1936). 1,700 tons gross. 272' x 40' (draft unreported). Diesels, 1,750 HP. 13 kts. Among vessels of Axis or Axis-occupied countries taken over by U. S.

LUDINGTON, AK-37 (ex-James Otis, 1920). Former Army transport, one of nine turned over to Navy, of which two, *Liberty* and *Meigs*, have been lost. 8,266 deadweight tons. 439' 6" x 60' x 30' 5". Geared turbines, 2,500 HP. 11.5 kts.

REGULUS, AK-14 (ex-Glenora, 1920). Former Shipping Board vessel, Hog Island built. Full load displacement: 10,550 tons. 376' x 52' 2" x 24'. Reciprocating engines, 2,500 HP. 11.5 kts. Armament: 2 5"/51, 4 3" AA.

CAPELLA, AK-13 (ex-Comerant, 1920); SIRIUS, AK-15 (ex-Saluda, 1919); SPICA, AK-16 (ex-Shonnock, 1919); VEGA, AK-17 (ex-Lebonon, 1919). Hog Island Shipping Board products. Full load displacement: 11,450 tons. 380' x 54' 2" x 24' 5". Geared turbines, 2,500 HP. 11.5 kts. Armament: 2 5"/51; 4 3" AA.

J. R. R. HANNAY, AK-32 (ex-Waukegan, 1919). 6,209 tons gross. 395' 5" x 55' x 31' 4". Geared turbines, 2,500 HP. 11.5 kts. Former Army transport.

HENRY GIBBONS, AK-33 (ex-West Elcasco, 1918), and IRWIN L. HUNT, AK-38 (ex-Edenton, 1918), 409' 6" x 54' 2" x 27' 1"; W. R. GIBSON, AK-36 (ex-West Segovia, 1919), 409' 8" x 54' 2" x 27' 7"; WILLIAM H. POINT, AK-40 (ex-West Corum, 1919), 410' x 54' 2" x 27' 6". Former Army transports. Full load displacement: About 12,000 tons. Geared turbines, 2,500 HP. 11.5 kts.

MENDOCINO, AK-39 (ex-Redwood, 1917). Former Army transport. Wooden ship, 1,793 tons gross. 226' 6" x 41' 9" (draft unreported). Two screws, reciprocating engines, 1,000 HP. 9 kts.

AROOSTOK, AK-44 (ex-CM-3, ex-Bunker Hill, 1907). Built by Cramp as coastal steamer, acquired by Navy in 1917 and employed for years as minelayer. Displacement: 4,200 tons. 386' 7" x 52' 2" x 15' 7". Two screws, reciprocating engines, 7,000 HP. 20 kts. Armament: 1 5"/51; 2 3" AA; 2 6-pounder; 4 1-pounder.

FAST TRANSPORTS

STRINGHAM, APD-6 (ex-DD-83, 1918). Displacement: 1,060 tons. 314' 4" x 30' 6" x 8' 6". Geared turbines, 13,500 HP. 25 kts. Armament: 2 4"/50; several smaller, AA.

MANLEY, APD-1 (ex-DD-74, 1917). Displacement: 1,020 tons. 315' 6" x 30' 8" x 7' 6". Geared turbines, 13,500 HP. 25 kts. Armament: 2 4"/50; several smaller, AA.

Stringham and *Manley* are the remaining two of a group of six fast transport ex-flush deck destroyers. The experiment seems not to have been too successful, the other four all having been lost in the Pacific (*Colhoun*, *Gregory*, *Little*, *McKeon*). Each was equipped to carry landing barges and a third of a battalion of Marines. *Manley* is one of six experimental flush-deckers preceding the main groups of flush deckers in the U. S. built during the last war. Two of the other five have been scrapped, and the remaining three are now in the Royal Navy. *Manley* and sisters have cut-away sterns, unlike later flush-deckers. *Stringham* belongs to 75-185 class of flush-deckers.

TRANSPORTS

This list covers only Navy-listed transports, the many operated by the War Department and War Shipping Administration being omitted. Even within these limits, however, the list is not complete, for the Navy has acquired many more transports than have been publicly named. One U. S. Navy transport, *Catlin*, AP-19, the former German liner *George Washington*, has been transferred to British Ministry of War Transport.

Mann type: GEN. WILLIAM A. MANN (7/18/43); GEN. HENRY W. BUTNER (9/19/43), GEN. WILLIAM D. MITCHELL (10/31/43) and at least two others, built by Federal Shipbuilding, possibly under War Department contracts and not for the Navy at all. Specially designed as troop transports. Are reported to be of large size.

FREDERICK FUNSTON (9/27/41); JAMES O'HARA (12/30/41); CUSTER (11/6/42); DU PAGE (12/19/42); MONROVIA (1942); WOOD (ex-*Executar*, 2/13/43); OSAGE, AP-108 (6/30/43). No particulars reported. Some at least, however, are converted merchantmen, doubtless of one or another of standard Maritime Commission designs. *Osage*'s name duplicates that of a netlayer, AN-3. It may therefore have been changed.

DOYEN, AP-2 (7/9/42); FELAND, AP-18 (11/10/42). Built by Consolidated Steel at Los Angeles. 6,510 tons gross. 389' x 56' x 19'. Geared turbines, 8,000 SHP. 18 kts.

PRESIDENT JACKSON, AP-37 (1940); PRESIDENT ADAMS, AP-38 (1941); PRESIDENT HAYES, AP-39 (1940); ARTHUR H. MIDDLETON (ex-African Comet, 1941); GEORGE CLYMER (ex-African Planet, 1941); SAMUEL CHASE (ex-African Meteor, 1941); THOMAS JEFFERSON (ex-President Garfield, 1941); THOMAS STONE (ex-President Van Buren, 1941). Former merchantmen of Maritime Commission C-3P type acquired by purchase. 9,255 tons gross. 492' x 69' 6" x 29' 7". Geared turbines, 8,500 SHP. 16.5 kts.

CRESCENT CITY, AP-40 (ex-Delormeons, 1940); J. W. McANDREW (ex-Delargentino, 1940); CHARLES CARROLL (ex-Deluruguay, 1941). Former merchantmen. 8,000 tons gross. 492' x 65' 6" x 26' 7". Geared turbines, 8,600 SHP. 18 kts.

WEST POINT, AP-23 (ex-America, 1940). The largest ocean liner ever built in the U. S., former flagship of United States Lines, acquired by the Navy right after her maiden voyage. Built by Newport News Shipbuilding. 26,454 tons gross. 663' 7" x 93' 6" x 30' 5". Two screws, four sets geared turbines, 32,000 SHP. 20 kts. Armament: 4 5"/38 DP; many smaller, AA. Only large ocean liner of completely fireproof construction throughout, a new asbestos-based "mineral board" replacing wood for all interior fittings.

JAMES PARKER (ex-Panoma, 1939). 10,000 tons gross.

LAFAYETTE (ex-Normandie, 1935). 83,423 tons gross. 1,029' x 118' 6" x 29' 6". Four screws, turbo-electric drive, 160,000 SHP. 30 kts. *Lafayette*, one of the world's three largest vessels, (other two, *Queen Mary* and *Queen Elizabeth*, of approximately same size) and once indisputably the most handsomely fitted, is now undergoing repairs at an East Coast shipyard following the disastrous fire of February, 1942. The fire capsized and all but destroyed her at the Hudson River, New York City pier where she was being converted to troop transport use. The operation of righting her, not completed until late 1943 and one of the most arduous salvage tasks on record, took over a year. The Navy originally acquired her when the U. S. requisitioned all vessels of Axis or Axis-occupied nations in American ports. The spectacular *Normandie* fire was caused by sparks from a welder's torch; the blame, however, lies not only with him, but with the Navy and the contractor who was converting her. Fire and anti-sabotage precautions aboard the vessel were non-existent. The capsizing of the vessel was caused by an overload of water on her port side, put into her by firefighters unacquainted with her layout.

WAKEFIELD, AP-21 (ex-Manhattan); MOUNT VERNON, AP-22 (ex-Washington) (both 1932, by Newport News Shipbuilding). Former U. S. Lines queens in North Atlantic luxury trade, chartered by Navy in 1941. 24,300 tons gross. 668' 5" x 86' 4" x 33' 4". Geared turbines, 30,000 SHP. 20 kts. Armament: 4 5"/38 DP; several smaller, AA. *Wakefield* caught fire at sea in 1942, but was brought safely back to New York and repaired.

MONTEREY (1932). 18,017 tons gross. 604' x 79' 3" x 28' 3". Geared turbines. Former merchant liner. No other particulars available.

HARRY LEE, AP-17 (ex-Exochorda); JOHN PENN (ex-Excombion) (both 1931). Formerly American Export liners on Mediterranean run. 9,359 tons gross. 453' x 61' 8" x 28' 6". Geared turbines, 7,200 SHP. 16 kts. Were fitted to carry 1,800 troops. Two sister ships, *Joseph Hewes* and *Edward Rutledge*, also Navy transports, were lost in the African landing operation, November, 1942.

THOMAS H. BARRY (ex-Oriente, 1930). Former Ward liner, sister of ill-fated *Morro Castle*. 11,500 tons gross. 508' x 71' x 29'. Two screws, turbo-electric drive, 14,000 SHP. 20 kts.

WILLIAM WARD BURROWS, AP-6 (ex-Santa Rita, 1929). Former Grace liner, acquired 1939. 4,576 tons gross. 370' x 53' 2" x 20'. Two screws, Diesels, 3,500 HP. 13 kts. Armament: 2 5"/38 DP; several smaller, AA. Troop capacity: 1,800.

BARNETT, AP-11 (ex-Santa Maria, 1928). British-built Grace liner, acquired 1940. 7,857 tons gross. 466' x 64' x 25' 4". Two screws, Diesels, 8,000 HP. 16 kts. Armament: 1 5"/38 DP; 3 3" AA; several smaller. Capacity: 1,800 troops. McCawley, lost in Solomons, was a sister.

MUNARGO, AP-20 (1921). Former Army transport. 6,336 tons gross. 413' 9" x 57' 10" x 22' 9". 5,800 HP. 15.5 kts.

WHARTON, AP-7 (ex-Southern Cross, 1920); HARRIS, AP-8 (ex-President Grant, ex-Pine Tree State, 1921); ZEILIN, AP-9 (ex-President Jackson, ex-Silver State, 1921); LEONARD WOOD, AP-25 (ex-Western World, ex-Nutmeg State, 1921); JOSEPH DICKMAN, AP-26 (ex-President Roosevelt, ex-Peninsula State, 1922); HUNTER LIGGETT, AP-27 (ex-Pan America, ex-Palmetto State, 1922); HENRY T. ALLEN, AP-30 (ex-President Jefferson, ex-Wenatchee, 1920); J. FRANKLIN BELL, AP-34 (ex-President McKinley, ex-American Mail, 1921); AMERICAN LEGION, AP-35 (1920). "State" class transports, built under last war program at several yards, differ in minor details. General specifications: 13,712 to 14,174 tons gross; 516' 5"-517' x 72' 2" x 27' 8". Two screws, four sets geared turbines, 12,000-15,000 SHP. 18-18.5 kts. Capacity: 2,500 troops. All these vessels except Wharton, Harris and Zeilin (acquired directly by Navy a little earlier) purchased by Army in 1940-41, turned over to Navy with 21 other Army transports and cargo ships in mid-1941. In peace years, these vessels all served on a variety of foreign trade runs.

CHAUMONT, AP-3; CHATEAU THIERRY, AP-31; ST. MIHIEL, AP-32 (all 1920). Built at Hog Island under last war program. Displacement: 8,300 tons. 448' (Chaumont), 436' 7" (others) x 58' 3" (Chaumont), 58' (others) x 23'. Geared turbines, 6,000 SHP. 15 kts. Capacity: 1,350 troops. Two vessels of same general class are Navy's Wright and Argonne. Seven others, in commercial service in peacetime, were transferred to Belgian registry by the U. S. Lines in 1939 to carry war cargoes to Britain despite neutrality laws. St. Mihiel and Chateau Thierry were Army vessels until 1941.

HEYWOOD, AP-12 (ex-City of Baltimore, ex-Steadfast, 1919); FULLER, AP-14 (ex-City of Newport News, ex-Archer, 1919); WILLIAM P. BIDDLE, AP-15 (ex-City of San Francisco, ex-City of Hamburg, ex-Eclipse, 1919); NEVILLE, AP-16 (ex-City of Norfolk, ex-Independence, 1918). Former intercoastal merchantmen, acquired by Navy in 1940. 8,378 tons gross. 495' 5" x 56' x 25' 3". Single screw, geared turbines, 9,500 SHP. 18.2 kts. Armament: 1 5"; 3 3" AA; several smaller. Capacity: 1,700 troops. G. F. Elliott, AP-13, of same type, was lost in the Solomons.

ERNEST HINDS, AP-28 (ex-Kent, ex-Santa Teresa, 1918); JOHN L. CLEM, AP-36 (ex-Irwin, ex-Santa Cecilia, ex-Guatemala, ex-Santa Ana, 1918). Former Army transports. 4,858 tons gross. 360' 2" x 51' 6" x 22' 8". Reciprocating engines, 3,400 HP. 12 kts.

ORIZABA, AP-24 (1918). Former Ward liner, acquired by Army in February, 1941, and transferred to Navy in July. 6,937 tons gross. 423' x 60' x 15' 8". Geared turbines, 8,500 SHP. 18 kts.

STRATFORD, AP-41 (ex-Catherine, 1918). Former Hull liner, built on Great Lakes during last war. 2,268 tons gross.

HENDERSON, AP-1 (Philadelphia Navy Yard, 1916). Built-for-the-purpose transport dating back to U. S. preparedness program of last war. Standard Displacement: 7,750 tons. 483' 10" x 61' 1" x 19' 11". Two screws, reciprocating engines, 4,000 HP. 14 kts. Armament: 8 5"/51; 2 3"; 2 3-pounder; 2 1-pounder. Capacity: 2,000 troops.

REPUBLIC, AP-33 (ex-President Buchanan, ex-German President Grant, 1907). 17,886 tons gross. 599' x 68' 2" x 34'. Two screws, reciprocating engines, 7,650 HP. 14.5 kts. German liner taken over by U. S. after last war, operated commercially until acquired by Army; transferred to Navy, 1941.

ULYSSES S. GRANT, AP-29 (ex-Madawaska, ex-König Wilhelm II, 1907). 9,410 tons gross. 490' 4" x 55' 3" x 27' 6". Reciprocating engines, 7,800 HP. 18 kts. A German liner taken over after last war, served as Army transport Madawaska; acquired by Navy in 1941.

COASTAL TRANSPORTS

On Jan. 1, 1944, the Navy Department announced the loss of a coastal transport, APC-21, off New Britain on the preceding December 17, disclosing the existence of a previously unreported class of naval vessel. APC-21, which had no name, was 100 feet long and had a displacement of 230 tons. No other details were reported. Some Navy APCs may have been acquired abroad, for use in overseas combat theaters.

HOSPITAL SHIPS

Photo Page 97

Although under international law hospital ships travel war-darkened seas brightly lighted and are thus well known to the enemy, neither the Army nor the Navy has made public the names of any hospital ships beyond those acquired before the war except for the Army's Acadia. Many more, however, are obviously in service.

SOLACE, AH-5 (ex-Iroquois, 1927). Former New York-Miami liner, purchased 1940. 6,209 tons gross. 394' 8" x 62' 2" x 19' 4". Two screws, four sets geared turbines, 8,500 SHP. 18 kts.

RELIEF, AH-1 (Philadelphia Navy Yard, 12/19). 9,800 tons full load displacement. 483' 10" x 61' 1" x 19' 7". Two screws, geared turbines, 5,250 SHP. 16 kts. A built-for-the-purpose vessel, near sister of the transport Henderson.

BARRACK SHIP

EDMUND B. ALEXANDER, APL-1 (ex-Amerika, 1905). 21,329 tons gross. 668' 9" x 74' 4" x 22' 10". Reciprocating engines, 16,000 HP. Speed: 17 kts. German liner seized during the World War.

SURVEYING SHIPS

BOWDITCH, AG-30 (ex-Santa Inez, 1929). Former Danish-built Grace liner purchased 1939. Displacement: 6,000 tons. 380' x 53' x 21' 6". Two screws, Diesels, 4,700 HP. 14 kts.

HANNIBAL, AG-1 (ex-Joseph Holland, 1898). Ex-collier. Displacement: 2,160 tons. 274' x 39' 3" x 15' 6". Coal-burner, 1,100 HP. 9 kts.

FLEET TUGS

Photo Page 100

At least 26 Cherokee Class

CHEROKEE, AT-66 (11/10/39); APACHE, AT-67; ARAPAHO, AT-68 (ex-Catawba, 6/23/42); CHIPPEWA, AT-69 (7/25/42); CHOCTAW, AT-70 (10/18/42); HOPI, AT-71; KIOWA, AT-72; MENOMINEE, AT-73; PAWNEE, AT-74; SIOUX, AT-75 (5/27/42); UTE, AT-76; BANNOCK, AT-81; CARIB, AT-82; CHICKASAW, AT-83 (7/23/42); CREE, AT-84 (8/17/42); LIPAN, AT-85 (9/17/42); MATACO, AT-86 (10/14/42); MORENO, AT-87 (7/10/42); NARRAGANSETT, AT-88 (8/8/42); PINTO, AT-90; SENECA, AT-91; TAWASA, AT-92; TEKESTA, AT-93; YUMA, AT-94; ZUNI, AT-95; MUNSEE (1/21/43); and probably others. Displacement: 1,450 tons. 210' x 38' 6" x 12'. Four sets Diesels, electric drive, 3,000 HP. 16.5 kts. Armament: 1 3"/50 AA; several smaller. Equipped with pumps and other salvage devices. Some of above may be among tugs transferred to Britain by U. S.

14 Bagaduce Class

8 BAGADUCE, AT-21 (ex-Ammonoosuc, 1919); KALMIA, AT-23 (1919); KEWAYDIN, AT-24 (1919); UMPQUA, AT-25 (1919); WANDANK, AT-26 (1920); TATNUCK, AT-27 (ex-Iosco, 1919); SUNNADIN, AT-28 (ex-Katahdin, 1919); MAHOPAC, AT-29 (ex-Kickapoo, 1919); SCIOTA, AT-30 (ex-Watauga, 1919); PINOLA, AT-33 (ex-Nipisc, 1920); ALGORMA, AT-34 (1920); IUKA, AT-37 (1920); KEOSANOUA, AT-38 (1920); MONTCALM, AT-39 (ex-Kino, 1920). Displacements vary around 1,050 tons. 156' 8" x 30' x 14' 7". Reciprocating engines, single screw, 1,800 HP. 13 kts. Armament: 2 3" AA.

Various Tugs Purchased or Built, 1912-41

SONOMA, AT-12 (1912), 1,400 tons displacement, coal-burner, 13 kts.

ONTARIO, AT-13 (1912), 1,560 tons displacement, coal-burner, 13 kts.

ALLEGHENY, AT-19 (ex-Huron, 1918); SAGAMORE, AT-20 (ex-Comanche, 1917). 975 tons displacement. 1,800 HP. 13 kts.

GENESEE, AT-55 (ex-Monocacy, 1905), 1,140 tons displacement. Coal-burner, 15 kts. Bought 1917.

8AY SPRING, AT-60 (1920); CAHOKIA (1919); TAMAROA (1919). 775 tons displacement. 11 kts. *Cahokia* and *Tamaroa* may have been re-rated harbor tugs (YT).

ACUSHNET, AT-63 (1936), 865 tons displacement.

TUSCARORA, AT-77 (1941).

Nos. AT-78-80. No names announced.

UNDAUNTED (1917). 475 tons displacement. 11.5 kts. Possibly re-rated a harbor tug.

SALVAGE VESSELS

VIKING, ARS-1 (ex-USC&G *Gulde*, ex-*Flamingo*, AM-32); CRUSADER, ARS-2 (ex-USC&GS *Pioneer*, ex-*Osprey*, AM-29); DISCOVERER, ARS-3 (ex-USC&GS ship with same name, ex-*Auk*, AM-38) (all 1918-19). Former 8th class minesweepers fitted with pumps, air compressors and other salvage equipment. Served as Coast & Geodetic Survey vessels between wars. Displacement: About 1,200 tons. 187' 10" x 35' 5" (draft at present displacement unreported). Otherwise as 8th class. A fourth salvage ship, *Redwing*, ARS-4, of same type, was lost in the Mediterranean in September, 1943.

RESCUE TUGS

In 1942 and later the Navy ordered a number of ocean-going rescue tugs (designated ATR), a type of vessel not hitherto carried on the Navy list. Specifications and number ordered have not been released; however, 27 were to go to Great Britain under lend-lease.

CLASSIFICATION NOT REPORTED

Following is a list of merchant vessels taken over by the Navy, for which classifications and new names have not been reported:

AMERICAN BANKER (1941).

AMERICAN FARMER (1941).

AMERICAN MERCHANT (1941).

AMERICAN SHIPPER (1941).

CHIEF OURAY (12/28/42).

CHILTON (12/24/42).

CLAY (1/23/43).

DAVID DAVIS (11/6/42).

ELMORE (1/29/43).

FORT ROYAL (1935), 3,485 tons gross, Diesel-powered.

GEORGE B. CORTELYOU (12/26/42).

HAWAIIAN SHIPPER (1941), sister of *Delta*, AK-29.

HYDRA (1/43), 2,300 tons gross.

ILE DE RE (ex-*Jamar*, 1928), 5,104 tons gross.

MELVILLE W. FULLER (11/15/42).

MONT EVEREST (ex-*Mount Everest*, ex-*War Drake*, 1918), 5,120 tons gross.

PIERRE LACLEDE (11/29/42).

REDFIELD PROCTOR (12/12/42).

SEATRAN TEXAS (1940), 8,108 tons gross, possibly slated for use as aircraft transport, her train car spaces serving as hangars.

SHEHERAZADE (1935), 13,467 tons gross, Diesels.

WINDSOR (12/28/42).

MISCELLANEOUS

ALCOR, AG-34 (ex-*Dixie*, 1927), 8,188 tons gross. Flagship of fleet train.

ANTARES, AKS-3 (ex-*Nedmac*, 1919), 5,050 tons displacement. Carries equipment for photographing fleet gunnery practice and repairing targets.

ARGONNE, AG-31 (1920), 8,400 tons displacement. Hog Island built ex-submarine tender, sister of seaplane tender *Wright* and Chaumont class transports.

BEAR, AG-29 (the famous Arctic and Antarctic Explorer, 1876) and CALYPSO, AG-35. Coast Guard cutters transferred to Navy, 1941.

GOLD STAR, AG-12 (ex-*Arcturus*, ex-*Gold Star*, 1920), 4,860 tons displacement. Station ship at Samoa.

KAULAHE, AG-33 (ex-*Cubahama*, 1938), 932 tons gross. Hawaiian inter-island ferry.

KEOKUK (ex-*Columbia Heights*, 1914), 2,699 tons gross.

POTOMAC, AG-25 (ex-Coast Guard cutter *Electra*, 1934). 370 tons. 165' x 25' 3" x 8' 6". Diesels, 1,300 HP. 16.5 kts. Presidential yacht.

RIGEL, ARB-1 (ex-*Edgcombe*, 1919), 6,250 tons displacement. Former destroyer tender AD-13, sister of *Altair* and *Denebola*.

SEMMES, AG-24 (ex-DD-189, 1918), 1,190 tons displacement. Former flush-deck destroyer (186-347 class), used now as experimental vessel.

SUMNER, AG-32 (ex-*Bushnell*, 1915), 2,900 tons. Former submarine tender, recently used as survey vessel.

SEQUOIA, AG-23 (1925). Tender to Presidential Yacht.

YARD AND DISTRICT CRAFT

Photo Page 102

The U. S. Navy operates an enormous number of yard and district (i.e., harbor and base utility) craft, most of which are unnamed and do not warrant inclusion in the foregoing listing of types. Here is a list of yard and district types and designations:

| | |
|-----|--|
| YA | Ash lighters |
| YAG | Unclassified yard craft |
| YC | Open lighters |
| YCF | Railroad car floats |
| YCK | Open cargo lighters |
| YD | Floating derricks |
| YE | Ammunition lighters |
| YF | Covered lighters |
| YFB | Ferry boats and launches |
| TG | Garbage lighters |
| YH | Ambulance launches |
| YHB | Floating barracks |
| YM | Dredges |
| YMS | Motor minesweepers (Listed under coastal minesweepers, above) |
| YMT | Motor tugs |
| YN | Net tenders (Listed above) |

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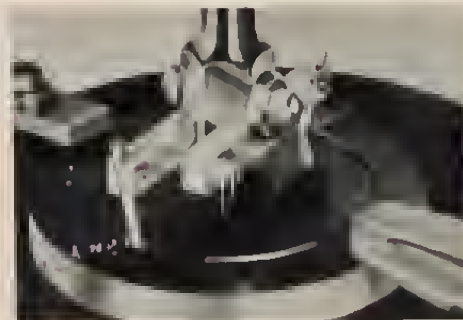
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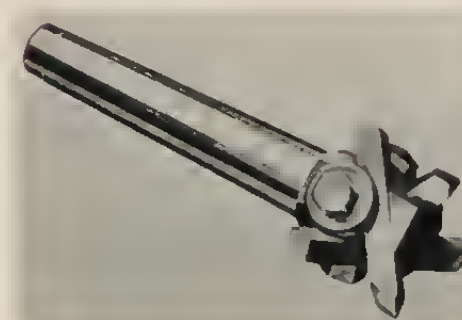
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| | |
|-----|--|
| YNg | Boom gate vessels (Listed under net tenders) |
| YO | Fuel oil barges |
| YOG | Gasoline tanker barges |
| YOS | Oil storage barges |
| YP | District patrol vessels (Chiefly motor launches, including such diverse units as practice torpedo retrievers, etc.) |
| YPD | Floating pile drivers |
| YPK | Pontoon stowage barges |
| YR | Repair barges |
| YRC | Submarine rescue chambers (diving bells) |
| YS | Stevedoring barges |
| YSD | Seaplane wrecking derricks |
| YSP | Salvage pontoons |
| YSR | Sludge removal barges |
| YT | Harbor tugs |
| YTT | Torpedo-testing barges |
| YW | Water barges |

UNITED STATES - AIRCRAFT CARRIERS—COMBATANT TYPE

Shangri-La Type and Others

Under the five-ocean-navy law of July 9, 1942, the Navy is authorized to build 500,000 tons of combatant carriers. Still others may be built under a law of Dec. 23, 1941, authorizing 150,000 tons of warship construction of any type the Navy chooses. The three 45,000-ton carriers listed below come under these authorizations. No plans, however, have been announced as to what the Navy plans to do with the rest of its carrier tonnage allotment. The only disclosure is that there will be carriers named *Shangri-La* and *Valley Forge*, probably improved Essexes. It is quite certain that the remaining hundreds of thousands of tons will not all be of the same type. Some may be repeat 45,000-tonners and others of altogether different designs. It is not improbable that some of these carriers, when and as built, will carry Essex class names vacated when Essex hulls were renamed to honor vessels lost in action.

3 45,000-ton Class

On Oct. 24, 1943, Navy Secretary Frank Knox announced that the U. S. would lay down two 45,000-ton carriers in 1943 and a third the next year. No particulars of these carriers—by far the largest ever attempted in the U. S. or Great Britain and probably the largest in the world—have been announced but they will obviously be about a fifth of a mile long with flight decks of unusual width, for their announced purpose is to permit the operation of twin-engined bombardment planes larger than the North American Mitchells which bombed Tokyo from the *Hornet*. The Mitchells' wingtips cleared the *Hornet's* island superstructure by six inches only, too narrow a margin for daily operations. A special type of twin-engined plane is to be built for the 45,000-tonners; a possibility is that they will have folding wings to increase the number that can be stowed—the first folding-wing twin-engined craft in existence. Two will be built by the Newport News Shipbuilding and Drydock Co., builders of most of the Essexes, and one by the New York Navy Yard, which customarily builds the first of new classes of large warships. Among the advantages of these huge craft will be adequate armor and compartmentation topside; owing to their size, they need not be shallow draft to allow flight decks to rise the necessary height out of water. Hence, there is less risk of topheaviness from heavy flight deck, hangar deck and upper works armor and compartmentation. No names have been announced. They are classified as CVBs, "battle carriers", in contrast to the Essexes, CVs, and the converted Cleveland, CVLs.

11 Essex Class

Photo Page 30

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|---------------------------------------|------|------------------------|-----------|----------|--------|
| ESSEX | CV 9 | Newport News S. B. Co. | 4/28/41 | 7/31/42 | 12/42 |
| YORKTOWN (ex-Bon Homme Richard) | CV10 | Newport News S. B. Co. | 12/ 1/42 | 1/21/43 | 1943 |
| INTREPID | CV11 | Newport News S. B. Co. | | 4/26/43 | 1943 |
| HORNET (ex-Kearsarge) | CV12 | Newport News S. B. Co. | | B/30/43 | 1943-4 |
| FRANKLIN | CV13 | Newport News S. B. Co. | | 10/13/43 | 1944 |
| HANCOCK | CV14 | Newport News S. B. Co. | | | |
| RANDOLPH | CV15 | Newport News S. B. Co. | | | |
| LEXINGTON (ex-Cabot) | CV16 | Bethlehem, Quincy | 7/15/41 | 4/ 3/43 | 1943 |
| BUNKER HILL | CV17 | Bethlehem, Quincy | 9/15/41 | 12/ 7/42 | 1943 |
| WASP (ex-Oriskany) | CV18 | Bethlehem, Quincy | | B/17/43 | 1943-4 |
| TICONDEROGA | CV19 | Bethlehem, Quincy | | | |

Standard Displacement: 27,000 tons, first seven ships. Last four ships originally reported as 26,500 tons, but may be heavier. Dimensions unreported.

Propulsion: Geared turbines. Speed*: 35 kts.

Plane Capacity: Four squadrons (72 planes) plus utilities, spares and flagship group (four planes). Armament*: 12 or 16 5"/38 DP, plus numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA. Armor*: 4" patch over side; heavy deck.

Although the Essexes, which are reputed to be improved and enlarged editions of the *Enterprise*, are listed as a single class, the Bethlehem ships are understood to differ slightly from the Newport News vessels. According to the first information concerning them, the latter were to be 25,000-tonners and the Bethlehem ships, slightly larger, 26,500 tons. Since the Newport News craft have proved to displace 27,000 tons, the Bethlehems may exceed 28,000. The Essexes were originally expected to accommodate five squadrons of planes; the growth in the size of naval planes in the last two years, however, makes four a more likely figure. The fourteen U. S. Navy carriers Navy Undersecretary Forrestal reported at sea in the fall of 1943 probably included the first five Essexes.

9 or more Independence Class

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|--------------|-----|--------------------|-----------|----------|--------|
| INDEPENDENCE | | New York S. B. Co. | | B/22/42 | 1942-3 |
| PRINCETON | | New York S. B. Co. | | 9/18/42 | 1943 |
| BELLEAU WOOD | | New York S. B. Co. | | 12/ 6/42 | 1943 |
| COWPENS | | New York S. B. Co. | | 1/17/43 | 1943 |
| MONTEREY | | New York S. B. Co. | | 2/28/43 | 1943 |
| CABOT | | New York S. B. Co. | | 4/ 4/43 | 1943 |
| LANGLEY | | New York S. B. Co. | | 5/22/43 | 1943 |
| BATAAN | | New York S. B. Co. | | B/ 1/43 | 1943 |
| SAN JACINTO | | New York S. B. Co. | | 9/26/43 | 1944 |

Standard Displacement: 10,000 tons. Hull Dimensions, probably 600' w.l. x 61' 6" x 20'.

Propulsion: Four screws, four sets geared turbines. Speed*: over 33 kts.

The Independences are conversions from the Cleveland class of light cruisers, but which ones have been so converted is not clear, the Navy refraining from making any announcement for fear of hurting morale in the cities after which the one-time cruisers were to have been named.

They are all from the group of Cleveland contracts awarded to the New York S. B. Co. Even so, they cannot be conclusively identified, for not all of the New York S. B. contracts have been so changed; New York S. B. has also turned out several cruisers of the type and may build more. No details of armament or plane capacity announced. Latter is probably about three squadrons 54 planes). The Clevelands are rated CVLs, light aircraft carriers, in distinction to the Essex' and others' CV.

1 Enterprise Class

Photo Page 28

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|------------|-----|------------------------|-----------|----------|---------|
| ENTERPRISE | CV6 | Newport News S. B. Co. | 7/16/34 | 10/ 3/36 | 5/12/38 |

Standard Displacement: 19,800 tons. Dimensions: 809' 6" (760' w.l.) x 61' 6" x 21' B".

Propulsion: Four screws, four sets geared turbines, 120,000 SHP. Speed: 34 kts.

Plane Capacity: Four squadrons (72 planes), plus utilities, spares and flagship group. Armament: 8 5"/38 DP, plus numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA. Armor: 4" patch on side; heavy deck.

The *Enterprise*, "Lucky E" to the men in the fleet, is the sole survivor of what was once our most numerous class of carriers, her sisters being the *Hornet* and *Yorktown* (not to be confused with new ships of the same name). "Lucky E" has participated in nearly every battle in the Pacific: she provided cover for the *Hornet* when the latter brought Gen. Doolittle's bombers to within 800 miles of Tokyo; she was in the Battle of Midway and of the Santa Cruz Islands, in each of which one of her sisters went down; she has participated in numerous raids in Japanese-dominated waters; and a squadron from her complement was the only carrier squadron to take part in the events at Pearl Harbor. She was approaching Pearl Harbor at the time and her scouting squadron, flying in to reach base earlier than the ship itself, stumbled into the fray. So far as can be told from aerial views and what little information has leaked through, the Japanese *Zuikaku* class of carriers are patterned after the *Enterprise*. The *Enterprise* also carries catapults on her hangar deck; planes can thus be catapulted and flown off simultaneously, enabling her to launch her squadrons with exceptional speed.

1 Ranger Class

Photo Page 29

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|--------|-----|------------------------|-----------|----------|---------|
| RANGER | CV4 | Newport News S. B. Co. | 9/26/31 | 2/25/33 | 6/ 4/34 |

Standard Displacement: 14,500 tons. Dimensions: 769' (728' w.l.) x 60' 1" x 19' B".

Propulsion: Two screws, two sets geared turbines, 53,500 SHP. Speed: 29.5 kts.

Plane capacity: Four squadrons (72 planes), plus utilities and spares. Armament: 8 5"/38 DP, plus numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA. Armor: 1" flight deck, plus small side patch of light armor.

The *Ranger*, which has spent most of the war in the Atlantic and helped cover our landing at Casablanca, was our first carrier built as such. She is now also our smallest. Unlike our other carriers, her island is extremely small; her funnels are six small ducts which swing horizontally outboard and are not in the island at all. As with all our carriers, in the past years the *Ranger's* crew walkways at the sides of the flight deck have been converted into what may be called A.A. balconies, with a practically solid line of Oerlikon guns lining each.

1 Saratoga Class

Photo Page 27

| Name | No. | Builder | Keel Laid | Launched | Comm. |
|----------|-----|--------------------|-----------|----------|----------|
| SARATOGA | CV3 | New York S. B. Co. | 9/28/20 | 4/ 7/25 | 11/16/27 |

Standard Displacement: 33,000 tons. Dimensions: 888' (830' w.l.) x 105' 6" x 24' 2".

Propulsion: Four screws, four turbo-electric units, 180,000 SHP. Speed: 33.9 kts.

Plane Capacity: Four squadrons, plus utilities and spares. Armament: 8 5"/55 in twin turrets; as of 1941, 12 5"/25 AA, possibly replaced by 5"/38 DP. Numerous Bofors 40 mm and Oerlikon 20 mm AC and other AA probably added. Armor: 6" belt, 3" deck.

The *Saratoga* is our oldest and largest carrier. She was begun as a giant battle cruiser of nearly 40,000 tons displacement, she and her late sister *Lexington* being converted to

carriers in accordance with the Washington treaty and her other sisters being scrapped. (The long interval between the *Saratoga's* keel laying and launching was due to the change). Until the Iowas, the *Saratoga's* engines were the most powerful in any warship. The *Lexington* once supplied the entire city of Seattle with electric power for several days when the local power system failed.

UNITED STATES - AIRCRAFT CARRIERS—ESCORT TYPE

As a result of successful tests on a group of former merchantmen, the Long Islands, converted in 1941, the U. S. Maritime Commission ordered for the Navy a large number of auxiliary aircraft carriers—flight decks atop merchant ship hulls—shortly before Pearl Harbor, and has ordered many more since. The Navy itself also converted the *Sangamon* and a number of other ex-merchant tankers taken over and commissioned originally as Navy oilers. By now, literally scores of "baby flat tops" or CVEs (as the Navy designates them, CV for aircraft carrier and E for escort) are in service in both the British and American navies. Most British CVEs are U. S.-built, under lend-lease).

Most American and British escort carriers are based on one of the Maritime Commission's standard combination cargo-and-passenger designs, the C-3. The only exceptions are the *Sangamons* and possibly the *Alazan Bays*. The *Alazan Bays*, built by Henry Kaiser's Oregon Shipbuilding Corporation, Vancouver, Wash. yard, appear to be based on a standard Maritime Commission tanker design, although they may be modified C-3s, too. Like the Long Islands, the first Maritime Commission-ordered CVEs are conversions, generally carried out, however, before the vessels were completed as merchantmen. Later vessels were ordered as carriers from the start. The greatest number of CVEs has been turned out by the Seattle-Tacoma Shipbuilding Corporation, with the Kaiser yard, which had completed eighteen by the end of 1943, second. (American and British escort carriers, it should be noted, differ markedly from Japanese auxiliary "flat tops," the Japs being derived from large luxury liners. Proposals for similar conversions here have been rejected because the Allies can make better use of large passenger liners as troopships.)

The CVEs, which the Navy originally rated AVG, aircraft auxiliaries, have shown themselves immensely valuable. They have proved decisive in combating the submarine, CVE-based planes sinking nearly a third of the 29 U-boats destroyed by American forces in three months of 1943. They have also served with distinction on convoy routes subject to heavy air attack, such as the routes to northern Soviet ports. Fighters from a British CVE in 1942 shot down almost a hundred Nazi bombers and torpedo craft during a single run to Murmansk. CVEs have been employed with success on combat missions as well, although they are unarmed, deficient in internal compartmentation and wanting in other of the fleet carrier's combat features. Finally, they are the most efficient of all means of transporting short-range fighters to distant fronts, eliminating not only the necessity for dis-assembly, crating and re-assembly of planes, but saving additional time by permitting fighters to take off and fly to their destinations while still several hundred miles and several days' steaming time away. As transports, CVEs can carry as many as 80 or 90 small fighters (such as Curtiss P-40s). They are stowed on the flight as well as hangar deck. The first planes are sent off by catapult, the remainder taking off under their own power when the flight deck has been sufficiently cleared. When Allied troops were pushed back in Tunisia late in 1942, owing largely to lack of air support, U. S. CVEs turned the tide by moving several hundred P-40s to North Africa in the space of a few weeks.

American-built British CVEs are mentioned below, as well as listed under Britain, in cases where the class to which they belong is known. Two American-built British escort carriers of uncertain relationship are the *Stalker* and *Attacker*, among the vessels which provided Allied air cover for the landing at Salerno. *Stalker* and *Attacker* probably belong to one of the later classes (Glacier and *Alazan Bay*), but they may be one of the still unidentified earlier units or ships still listed here as American, though transferred and renamed.

For further details on CVEs, especially relating to tactical employment, see article on U. S. naval aviation in photo section.

Modified Glacier Class

In 1942-3, an unannounced number of escort carriers of somewhat different design from the *Glacier* and her large brood of sisters, was ordered from the Seattle-Tacoma Shipbuilding Corp., builders of the *Glacier*. The principal differences are said to be in armament and other equipment rather than in hulls, which continue to be of the C-3 type of the *Glaciers* and other CVEs. No names or launch dates have been made public. Modified *Glaciers* will doubtless go to the Royal Navy under lend-lease as well as to the U. S. fleet.

Alazan Bay Class

Photo Page 30

ALAZAN BAY (4/4/43), TRIPOLI (9/2/43), NEHENTA BAY (11/28/43), TULAGI (1943) and many others, all built by Oregon Shipbuilding Corp. Displacement: About 18,000 tons. Length, w.l., 487'; other hull dimensions unreported. Length of flight deck, 514'. Propulsion: Two screws (?), geared turbines or Diesels. Plane Capacity: Approximately 30 fighters or smaller number of scout bomber and torpedo craft. Armament: Numerous Bofors and Oerlikon AA.

In addition to the four named above, two Alazan Bay units have been announced as launched for Britain (*Ameer* and *Natoma*), and there are probably others of this class in the Royal Navy. The Alazan Bays appear to be based on a standard Maritime Commission tanker design (possibly previously under construction by Oregon Shipbuilding) rather than on the customary C-3 hull. If so, hull dimensions may be 487' x 68' x 28', gross tonnage about 10,500 and speed, 18 kts., similar to Chicopee class of ex-merchantman Navy oilers, a standard Maritime Commission tanker type. In any case, the Alazan Bays differ notably from other CVEs in the fact that flight decks are longer than hulls (they are shorter in Long Islands and *Copahees* and perhaps in others) and in somewhat greater speed. The latter appeared to be desirable to facilitate launching heavily loaded bombardment craft on windless days; early escort carriers had difficulties in this respect. *Liscome Bay*, of Alazan Bay type, torpedoed in Gilberts in November, 1943, was first CVE announced by U. S. Navy as lost.

Glacier Class

GLACIER (9/7/42) and many others, all built by Seattle-Tacoma Shipbuilding Corp. Propulsion: Single screw, Diesels, about 8,500 HP. Otherwise substantially identical to *Copahee* class.

The *Glacier* and her sisters differ from the *Copahees* mainly in armament and the fact that they were contracted for as CVEs from the start. Like the *Copahees*, their hulls are of the Maritime Commission C-3 type. *Glaciers* have undoubtedly been turned out for the Royal as well as the American navy; no British names clearly identifiable as *Glaciers*, however, have been announced.

4 or more Sangamon Class

SANGAMON (ex-AO-28, ex-Esso Trenton, 1939), SUWANEE (ex-AO-33, ex-Markay, 3/4/39) and two or more other former Chemung class oilers. Displacement: About 19,000 tons (11,500 tons gross). Dimensions: 552' x 75' x 30'. Propulsion: Two screws, two sets geared turbines, 11,500 SHP. Speed: 18 kts. Plane capacity and armament unreported, but probably roughly same as *Copahees*.

The Navy requisitioned the *Sangamon* in 1940 and the *Suwanee* in 1941 (other *Chemungs* taken over in same years) and commissioned them as oilers (hence AO numbers). In 1941, however, needing escort carriers more than tankers (the U. S. needed both badly, that year), the Navy converted and recommissioned them as CVEs, along with two or more of their sister ships. There has been no report of any *Sangamon*-type CVEs being transferred to Great Britain, but some may have been.

12 or more Copahee Class

Photo Pages 30, 31

Ingalls Shipbuilding: CHARGER (ex-Rio de la Plata, 3/1/41).

Seattle-Tacoma Shipbuilding: COPAHEE (10/21/41), BOGUE (1/15/42), CARD (2/21/42), NASSAU (4/4/42), CORE (5/15/42), ALTAMAHA (5/22/42), BARNES (5/22/42), BLOCK ISLAND (6/6/42), BRETON (6/27/42), CROATAN (8/3/42).

Western Pipe & Steel: HAMLIN (3/7/42).

Displacement: About 17,600 tons. Dimensions: 492' x 69' 6" x 28' 6". Propulsion: Single screw, Diesels (possibly geared turbines in *Charger* and other units), 8,500 HP. Speed: 16.5 kts. Plane capacity: About 30 fighters or smaller number of scout bombers and torpedo craft. Armament: Numerous Bofors and Oerlikon AA.

The *Copahees* were begun as C-3 type Maritime Commission vessels, but were converted to CVEs before completion as such. (Change in status, however, ordered for this class after

keel laying or even after launching). The *Copahees*, whose flight decks do not extend the full length of the ship, have a small island on the starboard side with a characteristic rectangular mast structure atop (unlike the Long Islands, which have no island at all). The island carries the exhaust stacks, bridge and control stations, as well as antennae. The *Copahees* are equipped with derricks for retrieving planes overboard, and some or all (especially if serving as transports) have catapults. The *Card*, cited as flagship of an Atlantic convoy task force which sank or probably sank several attacking U-boats in a three-day battle with a wolf pack, is one of the few vessels which has so far won a Presidential unit citation. *Charger*, lend-leased to Britain, but now back in the U. S. fleet, is one of four CVEs built by Ingalls. The three others, all built for Britain, are *Battler*, *Hunter* and *Pursuer*. Three Seattle-Tacoma-built *Copahees* are also in the Royal Navy: *Ravager*, *Searcher* and *Tracker*. Other *Copahees* may be under the British flag as well.

3 or more Long Island Class

LONG ISLAND (ex-Mormacmail, 1/15/40), ex-MORMACLAND (12/14/39), ex-MORMAC-TERN (7/15/39) and others, possibly including ex-Mormacstar. Displacement: About 17,600 tons. Dimensions: 492' x 69' 6" x 28' 6". Propulsion: Single screw, Diesels, 8,500 HP. Speed: 16.5 kts. Plane capacity: 30 fighters or smaller number of scout bombers and torpedo craft. Armament: Numerous Bofors and Oerlikon AA.

The *Long Island* and her unidentified sisters were the original U. S. escort carriers. All were complete or nearly complete when taken in hand for conversion. Some Long Islands may have been lend-leased to Britain. The Long Islands, like their later confreres, have C-3 Maritime Commission hulls. Unlike later vessels, however, they have no island. Their Diesel engine exhausts vent through side openings. When first commissioned, their normal complement was a single squadron of fighters (18 planes). This has apparently been increased since.

UNITED STATES - AIRCRAFT CARRIERS—TRAINING TYPE

1 Sable Class

SABLE (ex-Greater Buffalo, 1923). 7,739 tons gross. Dimensions: 519' x 58'; present draft unreported. Propulsion: Paddle wheels, reciprocating engines, 10,500 HP. Other particulars unstated.

The *Sable* and *Wolverine*, below, are ex-Great Lakes passenger-and-cargo steamers (they used to ply between Cleveland and Buffalo) acquired by the Navy in 1942 and converted into carriers for naval air training on the Great Lakes. They are not only the first carriers ever commissioned for the specific purpose of training pilots in the tricky art of landing and taking off from a carrier in all standard types of naval combat planes, but the first fresh water "flat tops" and the first paddle-wheeled steamers commissioned in the U. S. navy in not a few decades.

1 Wolverine Class

Photo Page 30

WOLVERINE (ex-Seeandbee, 1912). 6,381 tons gross. Dimensions: 484' 6" x 58'; present draft unreported. Propulsion: Paddle wheels, reciprocating engines, 8,000 HP. Other details unstated.

The *Wolverine* was acquired by the Navy in 1942 and commissioned as a carrier in 1943.

UNITED STATES - AIRCRAFT AUXILIARIES

In addition to two aircraft transports, the U. S. fleet includes over 40 vessels classified as seaplane tenders (large seaplane tenders, designated AV; small tenders, AVP; and ex-destroyer seaplane tenders, AVD). They service Navy flying boats such as the Catalinas, Coronados and Mariners, providing them with fuel and ammunition, quarters for crews, and facilities for repair (minor in case of small tenders; complete in case of large units). They are not to be confused with Japanese and other seaplane carriers, which carry small seaplanes launched by catapult. U. S. seaplane tenders' charges go from point to point under their own power.



GRUMMAN "HELLCAT"

Grumman Aircraft Engineering Corporation

BETH PAGE, L. I., N. Y.

DESIGNERS AND MANUFACTURERS OF THE

| | |
|---------|------------|
| HELLCAT | AVENGER |
| WIDGEON | GREY GOOSE |
| WILDCAT | |



LARGE SEAPLANE TENDERS

1 *Chandeleur Class*

CHANDELEUR, AV-10 (11/29/41). Standard Displacement: 7,500 tons. Other data restricted.

The *Chandeleur* is a modified (reduced in size) Maritime Commission C-3 cargo vessel, taken over by the Navy in 1942 before completion and altered for plane servicing duties.

2 *Tangier Class*

Photo Page 98

TANGIER, AV-8 (ex-*Sea Arrow*, 1939), POCOMOKE, AV-9 (ex-*Exchequer*, 6/8/40). 7,773 tons gross. Dimensions: 492' x 69' 6" x 28' 6". Propulsion: Single screw, geared turbines, 16.5 kts. Armament: 4 5" DP; possibly several smaller, AA.

The *Tangier* and *Pocomoke* are Maritime Commission-built C-3 cargo ships, acquired by the Navy in mid-1940, shortly after launching, for conversion to seaplane tenders.

6 *Curtiss Class*

Photo Page 99

CURTISS, AV-4 (4/20/40); AL8EMARLE, AV-5 (7/13/40); CURRITUCK, AV-6 (9/11/43); NORTON SOUND, AV-11; PINE ISLAND, AV-12; PUGET SOUND, AV-12. First two built by New York Shipbuilding, third by Philadelphia Navy Yard and last three by Los Angeles Shipbuilding and Dry Dock. Standard Displacement: 8,625 tons. Dimensions unstated, but reported unofficially to be over 500' in length. Propulsion: Geared turbines. Armament: 4 5" DP; possibly some smaller, AA.

The Curtisses are the largest built-for-the-purpose American seaplane tenders. They have facilities for servicing two squadrons of flying boats (24 planes in all). The first three are rated as flagships, i.e., have facilities for command staff of an entire patrol wing, including a special unit of three catapult-launched small seaplanes (two observation and one utility). (Last three are also likely to prove to be flagships). The *Curtiss* was slightly damaged at Pearl Harbor, but has long been back in service.

1 *Wright Class*

WRIGHT, AV-1 (ex-World War I emergency vessel, type 8, 4/28/20). Standard Displacement: 8,675 tons. Dimensions: 448' x 58' 3" x 19' 2". Propulsion: Geared turbines, 6,000 SHP. Speed: 15 kts. Armament: 2 5"/51; 2 3"/50 AA; 4 MG AA.

Until 1940, the *Wright* was one of the only two large U. S. seaplane tenders in commission, the other being none other than the *Langley*, which spent her last days as AV-3. The *Wright* was built at Hog Island, the fabulous 50-way shipbuilding center of the last war. Like the Curtisses, the *Wright* is fitted as a flagship. She has facilities for a full squadron of flying boats (12 planes).

SMALL SEAPLANE TENDERS

8, *Type Uncertain*

KENNETH WHITING (building), ONSLOW (9/20/42), ORCA (10/4/42), REHOBOTH (8/3/42), SAN CARLOS (9/7/42), SHELKOF (1/31/43), SUISUN (3/14/43), TIMBALIER (4/18/43). Data restricted.

The above vessels are listed here because their names suggest that some or all are small seaplane tenders, perhaps repeat *Barnegats*. They may well prove, however, to be of an altogether different type.

16 *Barnegat Class*

Photo Page 98

Associated Shipbuilders: ROCKAWAY, AVP-29 (2/14/42); SAN PABLO, AVP-30 (3/31/42); UNIMAK, AVP-31 (5/27/42), YAKUTAT (7/2/42).

Boston Navy Yard: HUMOLDT, AVP-21 (3/17/41); MATAGORDA, AVP-22 (3/18/41).

Lake Washington Shipyard: A8SECON, AVP-23 (3/8/42); CHINCOTEAGUE, AVP-24 (4/15/42); COOS BAY, AVP-25 (5/15/42); HALF MOON, AVP-26 (7/12/42); MO8JACK, AVP-27 (8/2/42); OYSTER BAY, AVP-28 (1942).

Puget Sound Navy Yard: 8ARNEGAT, AVP-10 (7/41); 81SCAYNE, AVP-11 (7/41); CASCO, AVP-12 (1942); MACKINAC, AVP-13 (1942).

Standard Displacement: 1,695 tons. Propulsion: Diesels. Speed: 20 kts. Armament: 2 5" DP in gunhouses; possibly some smaller, AA. No other details released.

The *Barnegats* were built to replace the "bird" class ex-minesweeper seaplane tenders. Thanks to the war, however, both types are currently in service. The *Barnegats* are destroyer size and, with their trim lines and gunhouses forward, are indeed not unlike destroyers in appearance. The numbers AVP-14 to 20, unless taken up by new ships, are vacant. They were formerly held by ex-destroyer seaplane tenders now re-rated AVD.

8 ex-Minesweepers

LAPWING, AVP-1 (1918); HERON, AVP-2 (1918); THRUSH, AVP-3 (1918); AVOCET, AVP-4 (1918); TEAL, AVP-5 (1918); PELICAN, AVP-6 (1918); SWAN, AVP-7 (1918); SANDPIPER, AVP-9 (1919). Standard Displacement: 840 tons. Dimensions: 187' 10" x 35' 5" x 8' 10". Propulsion: Single screw, reciprocating engine, 1,400 HP. Speed: 14 kts. Armament: 2 3" AA; possibly some smaller, AA.

These eight World War I minesweepers (*Lapwing*, ex-AM-1; *Heron*, ex-10; *Thrush*, ex-18; *Avocet*, ex-19; *Teal*, ex-23; *Pelican*, ex-27; *Swan*, ex-34; *Sandpiper*, ex-51) are still giving good service on active fighting fronts, mothering Navy Catalinas and other patrol bombers. *Heron* won a citation for fighting off Japanese bomber attacks in the Philippines in the early days of the war; another fueled and armed the PBYs that hunted the Japanese in Aleutian logs and bombed them at Kiska after the raid on Dutch Harbor in June, 1942. *Gannet*, AVP-8 (ex-AM-41), was torpedoed off the U. S. Atlantic coast in 1942.

EX-DESTROYER SEAPLANE TENDERS

14 *Childs Class*

Photo Page 98

CHILDS, AVD-1 (1920); WILLIAMSON, AVD-2 (1919); GEORGE E. 8ADGER, AVD-3 (1920); CLEMSON, AVD-4 (1918); GOLDSBOROUGH, AVD-5 (1918); HULBERT, AVD-6 (1919); WILLIAM 8. PRESTON, AVD-7 (1919); 8ELKNAP, AVD-8 (1919); OSMOND INGRAM, AVD-9 (1919); 8ALLARD, AVD-10 (1918); THORNTON, AVD-11 (1919); GILLIS, AVD-12 (1919); GREENE, AVD-13 (1918); McFARLANE, AVD-14 (1920). Standard Displacement: 1,190 tons. Dimensions: 314' 4" x 30' 8" x 9' 3". Propulsion: Geared turbines, 15,000 SHP. Speed: 26 kts. Armament: 2 4"/50; several smaller, AA.

The *Childs* and her sisters are converted World War I four-stack destroyers of the 186-347 (1,190-ton) type. (*Childs*, ex-DD-241; *Williamson*, ex-244; *G. E. Badger*, ex-196; *Clemson*, ex-186; *Goldsborough*, ex-188; *Hulbert*, ex-342; *W. B. Preston*, ex-344; *Belknap*, ex-251; *O. Ingram*, ex-255; *Ballard*, ex-267; *Thornton*, ex-270; *Gillis*, ex-260; *Greene*, ex-266; *McFarlane*, ex-237). They were converted to their present duties before the war, losing torpedo tubes and two four-inch guns in favor of a platform on which flying boats may be "beached" for repairs, and handling gear. Their engine power and speed were also cut down, and two funnels removed. AVDs, which are much faster than AVPs or AVs notwithstanding their reduced propulsion machinery, serve as advance bases for flying boats. AVD-1 to 7 were classified AVP-14 to 20 for a short time after their conversion.

AIRCRAFT TRANSPORTS

2 *Kitty Hawk Class*

KITTY HAWK, APV-1 (ex-*Seatroin New York*, 1932); HAMMONDSPORT, APV-2 (ex-*Seatroin Havana*, 1932). 8,061 tons gross. Dimensions: 461' 4" x 63' 8" x 27'. Propulsion: Geared turbines, 8,800 SHP. Speed: 16 kts.

The *Kitty Hawk* and *Hammondspport* are sea-going train ferries purchased by the Navy and commissioned as aircraft transports designated APV in 1941. The train ferry's cavernous interior makes it eminently suitable for shipping planes to overseas points to which they cannot be flown or delivered by other means.

LAUNCHING BARGES

The Navy list includes one or more (AVC-1 and possibly others) large self-propelled barges equipped with powerful catapults for launching flying boats when water is too rough for unassisted take-off.

UNITED STATES - NAVAL AIRCRAFT

SHIP-BASED BOMBERS

Brewster BUCCANEER (SB2A-1, SB2A-2)

Photo Page 35

Brewster Aeronautical Corp. Dive bomber, employed by Army, in slightly different form, as A-34 and by RAF as *Bermuda*. Mid-wing cantilever monoplane; fabric-covered control surfaces, otherwise all-metal. Retractable landing gear. Original versions had now-suppressed gun turret at after end of cowling. Internal bomb stowage. Crew, two. Span, 47'; length, 39' 6"; height, 15' 3"; wing area, 379 sq. ft.; weight (A-34 version), 12,250 lbs. Power plant, 14-cyl. two row radial air-cooled Wright Cyclone, 1,630 HP. 284 mph max. at 12,000' (*Bermuda*); range (*Bermuda*), approx. 700 miles. Production completed.

Curtiss HELLDIVER (SB2C-3)

Photo Page 37

Curtiss-Wright Corp. Dive bomber, also employed by Army as A-25. Low-wing cantilever monoplane; control surfaces fabric-covered, otherwise all-metal. Retractable landing gear and tail wheel. Internal bomb stowage. Power plant, two row radial air-cooled Wright Cyclone fronted by Curtiss electric propeller. All further data on combat model restricted.

Douglas DAUNTLESS (SBD)

Photo Page 36

Douglas Aircraft Co., Inc. Dive bomber, employed in four versions, SBD-1, 2 and 3. Model used by Army is the A-24. Has probably sunk more enemy vessels than any other type of U. S. aircraft. Low-wing cantilever monoplane; fabric-covered tail control surfaces, otherwise all-metal. Retractable landing gear; fixed tail wheel. External bomb racks. Two .50 cal MG fixed to fire through propeller disc, plus varying rear armament. Armor provided for crew of two. Span, 41'; length, 32'; height, 13'; wing area, 323.8 sq. ft.; weight (SBD-3), 7,540 lbs. Power plant, 9-cyl. radial air-cooled Wright Cyclone, 950 HP. 257 mph max. at 16,000'; range, 1,100 miles without bomb load.

Douglas DEVASTATOR (TBD-1)

Douglas Aircraft Co., Inc. Torpedo bomber, one of first monoplanes aboard carriers. Low-wing cantilever monoplane; fabric-covered control surfaces, otherwise all-metal. Retractable landing gear; fixed tail wheel. Wings fold upward. Internal torpedo or bomb stowage. Span, 50'; length, 35' 6"; height, 18' 1"; gross weight, 9,000 lbs. Power plant, 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasp Jr., 825 HP. 225 mph max. at 9,000'; range, 985 miles at 180 mph. Production completed.

Grumman AVENGER (TBF)

Photo Page 40

Grumman Aircraft Engineering Corp. Torpedo bomber, also manufactured by Eastern Aircraft Division of General Motors Corp., whose Avengers are designated T8M. Also employed by British Fleet Air Arm as *Torpon*. Mid-wing cantilever monoplane, metal throughout. Landing gear and tail-wheel retractable. Wings fold flush against fuselage. Internal stowage for full-sized torpedo. Armament unreported, except bubble turret fitted at after end of cowling. Crew, three. Power plant, 14-cyl. two row radial air-cooled Wright Cyclone, 1,600 HP. 270 mph max. at 7,500'; ceiling, over 20,000'; range, 1,400 miles at 215 mph. Other data unreported. Bears strong resemblance in appearance to Grumman *Wildcat* and *Hellcat*.

Vought SEA WOLF (TBU)

Vought-Sikorsky division of United Aircraft Corp. A new monoplane torpedo bomber, whose existence was disclosed in 1943. No details released.

Vought VINDICATOR (SB2U-2)

Vought-Sikorsky division of United Aircraft Corp. Dive bomber, first of monoplane type. Employed by RAF as *Chesapeake*. Low-wing cantilever monoplane; fabric-covered control surfaces and after part of fuselage, otherwise all-metal. Wings fold upward. Retractable landing gear; fixed tail wheel. Two .30 or two .50 cal MG. External bomb racks. Crew, two. Span, 42'; length, 34' 4"; wing area, 305.3 sq. ft.; gross weight, 6,500 lbs. Power plant, 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasp Jr., 750 HP. 257 mph max.; service ceiling, 28,200'; range, 700 miles. Production completed.

FIGHTERS

Brewster BUFFALO (F2A-2)

Brewster Aeronautical Corp. Single-seat fighter, employed by RAF and Netherlands under same name with modified equipment. Mid-wing cantilever monoplane; tail control surfaces fabric-covered, otherwise all-metal. Retractable landing gear; tail wheel fixed. Four .50 cal MG. Can carry 100-lb. bomb beneath fuselage. Span, 35'; length, 26'; height, 12'; wing area, 209 sq. ft.; gross weight (British and Dutch models), 6,438 lbs. Power plant (British and Dutch models), radial air-cooled 9-cyl. Wright Cyclone, 1,160 HP. Approx. 300 mph max. Production completed.

Grumman HELLCAT (F6F)

Photo Page 34

Grumman Aircraft Engineering Corp. Single-seat fighter. Low mid-wing monoplane. In basic structure resembles Grumman *Wildcat*, except center section has no dihedral and landing gear retracts into wings instead of fuselage. Wings fold flush along fuselage. Tail wheel retractable. Pilot cockpit armored. Employs unusual control system to gain in maneuverability. Power plant, 18-cyl. two row radial air-cooled Pratt & Whitney Double Wasp, 2,000 HP. Approximately 400 mph max. No other details reported. The *Hellcat*, which went into service in 1943, is the latest U. S. Navy fighter.

Grumman WILDCAT (F4F-3, F4F-4)

Photo Page 33

Grumman Aircraft Engineering Corp. Single-seat fighter, in service with the British Fleet Air Arm as the *Martlet*. Wildcats built by Eastern Aircraft Division of General Motors identified as FM. Mid-wing cantilever monoplane; control surfaces fabric-covered, otherwise all-metal. Landing gear retractable; fixed tail wheel. Wings fold flat against fuselage. Six .50 cal MG. Span, 38'; length, 28' 10"; height, 9' 2.5"; wing area, 260 sq. ft.; gross weight (F4F-3), 6,100 lbs.; (F4F-4), 5,876 lbs. Power plant (F4F-3), 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasp, 1,200 HP; (F4F-4), 9-cyl. air-cooled Wright Cyclone, 1,200 HP. 310 mph max. at 19,500' (F4F-3); 325 mph max. at 15,500' (F4F-4). Service ceiling, 28,000', and range, 1,150 miles.

Vought CORSAIR (F4U-1)

Photo Page 32

Vought-Sikorsky division of United Aircraft Corp. Single-seat fighter, also employed by Fleet Air Arm under same name. Corsairs built under license by Brewster designated F3A, and by Goodyear, FG-1 and F2G. Inverted gull low-wing cantilever monoplane, metal throughout. Landing gear and tail wheel retractable. Span, 40'; length, 30'. Power plant, 18-cyl. two row radial air-cooled Pratt & Whitney Double Wasp, 2,000 HP. Speed, 390 mph; ceiling above 36,000'. No other data available.

SCOUTS

Curtiss SEAGULL (SO3C-1)

Photo Page 41

Curtiss-Wright Corp. Scout-observation craft, for operation from cruiser and battleship catapults. Employed by British Fleet Air Arm as the *Seamew*, with certain U. S. Navy equipment omitted. Mid-wing cantilever monoplane; fabric-covered control surfaces, otherwise all-metal. Outer wing panels detachable for easy stowage aboard ship. As used aboard ship, has single central pontoon attached by single faired strut, with small wingtip pontoons; a land version with fixed landing gear is used for training purposes. Crew, two. Span, 38'; length, 36' 10" (seaplane), 34' 2" (landplane); height, 15' (seaplane), 11' 5" (landplane); wing area, 290 sq. ft. Power plant, 12-cyl. inverted air-cooled vee Ranger engine, 520 HP. No other data released.

Vought KINGFISHER (OS2U-3, OS2N)

Photo Page 41

Vought-Sikorsky division of United Aircraft Corp. Observation-scout, for operation from cruiser and battleship catapults. Employed by British Fleet Air Arm under same name, with certain U. S. Navy equipment deleted. Mid-wing cantilever monoplane; control surfaces and wings aft of main spar fabric-covered; otherwise all-metal. Single pontoon attached to fuselage by three faired struts in tandem; small wingtip pontoons. A landplane version with fixed landing gear is also in use, for training. Crew, two. Span, 35' 11"; length, 33' 8" (seaplane), 30' 1" (landplane); 14' 8" (seaplane); wing area, 261.9 sq. ft.; gross weight, 4,980 lbs. (seaplane). Power plant, 9-cyl. radial air-cooled Pratt & Whitney Wasp Jr., 400 HP. 171 mph max. at 5,000'; service ceiling, 18,200'; range, 900 miles.

SHORE-BASED BOMBERS

Consolidated Vultee LIBERATOR (PB4Y-1)

Photo Page 45

Consolidated Vultee Aircraft Corp. Long-range Patrol bomber, Navy version of standard Army plane. High-wing cantilever monoplane; control surfaces fabric-covered, otherwise all-metal. Fitted with the Davis wing. Tricycle landing gear fully retractable. Twin fin tail assembly. Span, 110'; length, 66' 4"; height, 17' 11"; gross weight, approximately 41,000 lbs. Power plants, four 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasps, each 1,200 HP. Other data of Navy version unreported. The *Liberator* was one of the first Army-type bombers to be employed by the Navy in place of patrol flying boats in combat areas.

Douglas HAVOC (BD-1, BD-2)

Photo Page 38

Douglas Aircraft Co., Inc. Attack bomber, BD-1 basically similar to A-20-A, and BD-2 to A-20-C of U. S. Army. Details of use by Navy so far unreported. Mid-wing cantilever monoplane; fabric-covered control surface, otherwise all-metal. Retractable tricycle landing gear. Tail unit includes typical tall Douglas fin. Crew, probably three. Span (all dimensions for BD-2), 61' 4"; length, 48'; height, 17' 1"; wing area, 465 sq. ft. Power plants, two 14-cyl. two row radial air-cooled Wright Cyclones, 1,350 HP at approx. 5,000'. Other details unstated.

Lockheed HUDSON (PBO-1)

Lockheed Aircraft Corp. Patrol bomber, long used by RAF and also employed by U. S. Army as A-29. Nicknamed "old boomerang" ("it always comes back") in token of extraordinary reliability and durability. Mid-wing cantilever monoplane; metal throughout. Landing gear retractable; tail wheel fixed. Twin fins. Modified Fowler flaps fitted. Navy crew unreported. Span, 65' 6"; length, 44' 4"; height, 11' 10.5"; wing area, 551 sq. ft.; gross weight, approx. 18,500 lbs. Power plants, two 9-cyl. radial air-cooled Wright Cyclones or two 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasps, of over 1,000 HP each. No performance data available.

Lockheed VENTURA (PV-1)

Photo Page 39

Vega Division of Lockheed Aircraft Corp. Patrol bomber. A development of Lockheed Hudson, employed by RAF under same name and by Army as 8-34 or O-56. Mid-wing cantilever monoplane; metal throughout. Landing gear and tail-wheel retractable. Break in line of fuselage underbody to provide tunnel gun position. Span, 65' 6"; length, 51' 2.5"; height, 11' 10.5"; wing area, 551 sq. ft. Power plants, two 18-cyl. two row radial air-cooled Pratt & Whitney Double Wasps, 2,000 HP each. (14-cyl. Wright Cyclones of 1,700 HP sometimes fitted.) No other data released.

Martin MARAUDER (JM)

Glenn L. Martin Co. Medium bomber, modification of Army 8-26B. Details of naval use unreported. Shoulder-wing cantilever monoplane, metal throughout. Retractable tricycle landing gear. Span, 65'; length, 58' 2.5"; height, 20'; wing area, 525 sq. ft.; gross weight, approx. 26,000 lbs. Power plants, two 18-cyl. two row radial air-cooled Pratt & Whitney Double Wasps of 2,000 or more HP each. Other data unreported, but *Marauder* is described as one of world's fastest medium bombers. Was employed as a torpedo bomber at Battle of Midway by the Army.

North American MITCHELL (PBJ-1)

North American Aviation, Inc. Patrol bomber. Slight modification of familiar B-25 series of bombers employed by Army and RAF. Mid-wing cantilever monoplane, metal throughout. Retractable tricycle landing gear. Twin fins. Outer wing panel compartments sealed to aid flotation. Slotted wing flaps. Span, 67' 5.5"; length, 54'; height, 15' 9"; wing area, 610 sq. ft.;

gross weight, approx. 24,000 lbs. Power plants unreported, but two 14-cyl. two row radial air-cooled Wright Cyclones of about 1,700 HP each have been employed in earlier Army Mitchells.

PATROL FLYING BOATS

Boeing SEA RANGER (XPBB-1)

Boeing Aircraft Co. Long-range patrol flying boat. High-wing cantilever monoplane. Power plants, two 18-cyl. two row radial air-cooled Wright Cyclones, 2,000 HP each. No other data available.

Consolidated Vultee CATALINA (PBV-5, PBV-5A, PB2B, PBN)

Photo Pages 44, 46

Consolidated Vultee Aircraft Corp. Long-range patrol flying boat. A celebrated work horse of the U. S. fleet and of the RAF (which employs it under the same name). Also used by the Royal Canadian Air Force (which designates it the *Canso*) and U. S. Army (as OA-10). Built by U. S. Naval Aircraft Factory as PBN, by Boeing as PB2B and by Boeing of Canada and Canadian Vickers. Semi-cantilever high wing monoplane; control surfaces fabric-covered, otherwise all-metal. Retractable wingtip floats. Wing raised above hull. PBV-5A has retractable tricycle landing gear and is braced for service as amphibian. Crew, seven. Span, 104'; length, 65' 1"; height, 18' 6"; wing area, 1,400 sq. ft.; gross weight (PBV-5), 26,650 lbs. Power plants, two 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasps, 1,200 HP each. 190 mph max. at 10,500'; service ceiling, 21,900'; range, 4,000 miles.

Consolidated Vultee CORONADO (PB2Y-2, PB2Y-3)

Photo Page 42

Consolidated Vultee Aircraft Corp. Long-range patrol flying boat. Employed by RAF under same name. High-wing cantilever monoplane; fabric-covered control surfaces, otherwise all-metal. Retractable wingtip floats. Twin fins, sharp dihedral to horizontal tailplane. Span, 115'; length, 79' 3"; height, 24' 8"; wing area, 1,780 sq. ft.; gross weight, approx. 65,000 lbs. Power plants, four 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasps, 1,200 HP each. Speed, 226 mph. Other data unavailable. PB2Y-2 is patrol bomber; PB2Y-3 is cargo model, though it may have been adapted to patrol work.

Consolidated Vultee XP4Y-1

Consolidated Vultee Aircraft Co. Long-range patrol flying boat developed from Consolidated Model 31 commercial flying boat. High-wing (of Davis-Caltech low drag type) cantilever monoplane; control surfaces fabric-covered, otherwise all-metal. Stabilizer floats midway from hull to wingtip, retract to underside of wing. Retractable tricycle beaching gear. Twin fins; sharp dihedral to horizontal tailplane. Span, 110'; length, 73'; height, 23' 6"; gross weight, 46,000 lbs. Power plants, two 18-cyl. two row radial air-cooled Wright Cyclones, 2,000 HP each.

Martin MARINER (PBM-3)

Photo Page 43

Glenn L. Martin Co. Long-range patrol flying boat. Also employed by RAF, under same name. Gull-winged cantilever monoplane; metal throughout. Differs from earlier Mariners (PBM-1, 2) in having fixed instead of retractable outer panel floats. Span, 118'; length, 77' 2"; height, 17' 6". Power plants, two 14-cyl. two row radial air-cooled Wright Cyclones, each 1,350 HP. Speed is about 225 mph. Carries 3 to 5 tons of bombs or torpedoes.

TRANSPORTS AND UTILITIES

Beechcraft TRAVELLER (GB-1, GB-2)

Beech Aircraft Corp. Executive personnel transport, similar to Army C-43. Equal-span single-bay biplane with negative stagger. Composite construction. Retractable landing gear; fixed tail wheel. Capacity, pilot and three or four passengers (depending on fuel load). Span, 32'; length, 26'; height, 8' 2"; wing area, 296 sq. ft.; gross weight, 4,250 lbs. Power plant, 9-cyl. radial air-cooled Pratt & Whitney Wasp Jr., 450 HP. Cruising speed, 202 mph at 9,600'; service ceiling, 25,000'.

Beechcraft EXPEDITER (JRB-2)

Beech Aircraft Corp. Light transport, also fitted for photographic work. Identical with Army C-45-A, and with JRB-1 and C-45 except for extra transparent panels around cockpit. Low-wing cantilever monoplane; control surfaces fabric-covered, otherwise all-metal. Retractable



able landing gear; tail wheel fixed. Twin fins. Capacity, pilot and six passengers. Span, 47' 8"; length, 34' 3"; height, 9' 5"; wing area, 347 sq. ft.; gross weight, 7,500 lbs. Power plants, two 9-cyl. radial air-cooled Pratt & Whitney Wasp Jrs., 450 HP each. 220 mph at 62.5% power at 12,000'; service ceiling, 27,000'.

Curtiss COMMANDO (R5C-1)

Curtiss-Wright Corp. Transport, also employed by Army as C-46. Low-wing cantilever monoplane; all-metal. Landing gear and tail wheel retractable. Balloon-shaped fuselage, intended originally for integral pressurized cabin. Crew, three. Three cargo compartments, total volume 2,840 cu. ft. Span, 108'; length, 76' 4"; height, 22'; wing area, 1,360 sq. ft.; gross weight, 45,000 lbs. Power plants, two 18-cyl. two row radial air-cooled Pratt & Whitney Double Wasps, 2,000 HP each. 264 mph max.; service ceiling, 24,200'. One of world's largest twin-engine planes.

Douglas SKYMASTER (R5D-1)

Douglas Aircraft Co., Inc. Transport, similar to Army C-54 and commercial DC-4, a slightly scaled down version of original DC-4 developed in cooperation with U. S. airlines. Low-wing cantilever monoplane; fabric-covered control surfaces, otherwise all-metal. Retractable tricycle landing gear; rear wheels doubled. Commercial version accommodates 42 passengers and crew of five. Military version fitted for carrying heavy or bulky cargo externally, slung between main landing gear wheels. Span, 117' 6"; length, 92' 10"; height, 27' 9"; wing area, 1,462 sq. ft.; gross weight (military version), 62,000 lbs. Power plants, four 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasps, 1,250 HP each. 265 mph max. at 16,900'; service ceiling, 26,600'.

Douglas SKYTRAIN (R4D-1)

Photo Page 46

Douglas Aircraft Co., Inc. Cargo transport, similar to Army C-47 and RAF *Dakota I*. Basically the famed DC-3 with reinforced floors and large cargo doors in place of normal personnel-carrying equipment. Low-wing cantilever monoplane; fabric-covered control surfaces, otherwise all-metal. Landing gear retractable; tail wheel fixed. In emergency, can accommodate 28 paratroopers with full equipment on folding benches. Span, 95'; length, 64' 5.5"; height, 16' 11.25"; wing area, 987 sq. ft.; gross weight, 25,200 lbs. Power plants, two 14-cyl. two row radial air-cooled Pratt & Whitney Twin Wasps or 9-cyl. radial air-cooled Wright Cyclones of over 1,000 HP each. 230 mph max. at 8,500' (Twin Wasps); 220 mph max. at 7,000' (Cyclones); service ceiling, 23,200' (Twin Wasps), 21,900' (Cyclones).

Douglas SKYTROOPER (R4D-3)

Douglas Aircraft Co., Inc. Troop transport. Used by Army as C-53 or C-49 and RAF as *Dakota II*. Similar to *Skytrain* except fitted for personnel transport and omits large cargo doors. Accommodates 28 fully-equipped troops.

Douglas R3D-1, R3D-2

Douglas Aircraft Co., Inc. Transport similar to Douglas DC-5. Only a few in use. High-wing cantilever monoplane; control surfaces fabric-covered, otherwise all-metal. Retractable tricycle landing gear. Keel on belly of fuselage for skid landings in event of landing gear failure. Accommodates 18 to 21 passengers plus crew. Span, 78'; length, 62' 2"; height, 19' 10"; wing area, 824 sq. ft.; gross weight, 20,000 lbs. Power plants, two 9-cyl. radial air-cooled Wright Cyclones, 900 HP at 6,700'. 230 mph max. at 7,700'; service ceiling, 23,700'; range, 1,000 miles. Production completed.

Fairchild FORWARDER (GK-1)

Fairchild Aircraft Division of Fairchild Engine and Airplane Corp. Light personnel transport. Similar to Army UC-61 and RAF *Argus*. High-wing braced monoplane; composite construction. Landing gear fixed. Accommodates pilot and three passengers. Span, 36' 4"; length, 23' 9"; height, 8'; wing area, 174 sq. ft.; gross weight, approx. 2,600 HP. Power plant, 7-cyl. radial air-cooled Warner Super-Scarab, 165 HP. 140 mph approx. max. speed.

Grumman J2F-4

Grumman Aircraft Engineering Corp. Utility amphibian. Equal-span staggered single-bay biplane. Fabric-covered metal frame wings and tail; fuselage all-metal. Single central pontoon; stabilizing pontoons at wingtips. Retractable landing gear and tail wheel. Crew, two or three. Span, 39'; length, 34'; height, 12' 3.5"; wing area, 409 sq. ft.; gross weight, 6,170 lbs. Power plant, 9-cyl. radial air-cooled Wright Cyclone, 775 HP. 180 mph max. at 5,800'; service ceiling, 21,000'; range, 780 miles. Production completed.

Grumman J4F-1

Grumman Aircraft Engineering Corp. Utility amphibian flying boat, similar to civil *Widgeon*. Employed by RAF as *Gosling*. High-wing cantilever monoplane; fabric-covered control surfaces and wings aft of spar, otherwise all-metal. Landing gear and tail wheel retractable. Wingtip stabilizer floats. Accommodates four or five. Span, 40'; length, 31'; height, 9'; wing area, 245 sq. ft. Power plants, two 6-cyl. inverted vee air-cooled Rangers, 200 HP each. 138 mph at 62.5% power; service ceiling, 15,000'; range, 675 miles.

Grumman JRF-5

Grumman Aircraft Engineering Corp. Utility amphibian flying boat. JRF-58, navigation trainer. Formerly employed by Army as OA-9 and RAF as *Goose*. High-wing cantilever monoplane; control surfaces and wing aft of spar fabric-covered; otherwise all-metal. Landing gear retractable. Wingtip stabilizer floats. Crew, two or more. Span, 49'; length, 38' 4"; height, 12'; wing area, 373 sq. ft.; gross weight, 8,000 lbs. Power plants, two 9-cyl. radial air-cooled Pratt & Whitney Wasp Jrs., 400 HP each at 5,000'. 201 mph max. at 5,000'; service ceiling, 22,000'; range, 800 miles.

Lockheed LODESTAR (R50-1)

Lockheed Aircraft Corp. Transport, employed by Army as C-56, 57 and 60 and by RAF as *Lodestar*. Resembles *Ventura* bomber. Mid-wing cantilever monoplane; metal throughout. Twin fins. Retractable landing gear; tail wheel fixed. As commercial plane accommodated 14 passengers, three crew. Span, 65' 6"; length, 49' 10"; height, 11' 10.5"; wing area, 551 sq. ft.; gross weight, 18,500 lbs. Power plants vary, two Pratt & Whitney or Wright air-cooled radials of about 900 HP being mounted. Max. speed varies about 250 mph.

Martin MARS (PB2M-1)

Glenn L. Martin Co. Transport flying boat, next to Douglas 8-19, the world's largest plane. Originally designed as patrol bomber. High-wing cantilever monoplane. Outer panel stabilizer floats. Twin fins; sharp dihedral to horizontal tailplane. Power plants, four 18-cyl. two row radial air-cooled Wright Cyclones, over 2,000 HP each. Gross weight, over 140,000 lbs. Further details unavailable. Prototype subjected to lengthy tests; quantity order not placed until late 1943.

TRAINERS

Beechcraft KANSAN (SNB-1)

Beech Aircraft Corp. Gunnery and bombardment trainer, employed by Army as AT-11. Similar to Beechcraft *Voyager*, except has transparent nose and flexible guns and bomb racks.

Beechcraft NAVIGATOR (SNB-2)

Beech Aircraft Corp. Navigation trainer, employed by Army as AT-7. No data released, except equipped with celestial navigation dome, individual plotting tables for student navigators, carries additional crew of two and is powered by two 9-cyl. radial air-cooled Pratt & Whitney Wasp Jrs.

Boeing CAYDET (N2S-1, N2S-2, N2S-3)

Boeing Aircraft Co. Primary trainers, produced by former Stearman division of Boeing. Similar to Army PT-13, 17, 18, and 27. Single-bay unequal span staggered biplane; composite construction. Landing gear fixed. Accommodates student pilot and instructor. Span, 32' 2"; length, 25'; height, 9' 2"; wing area, 297.4 sq. ft.; gross weight, 2,700 lbs. Power plant, 7-cyl. radial air-cooled Continental (N2S-1 and N2S-3) or 9-cyl. radial air-cooled Lycoming (N2S-2), both 220 HP. 124 mph max.; service ceiling, 11,200'; range, 500 miles. N2S-1 and N2S-3 differ mainly in specialized naval equipment of latter.

Curtiss FALCON (SNC-1)

Curtiss-Wright Corp. Two-seat advanced trainer. Low-wing cantilever monoplane; ailerons fabric-covered, otherwise all-metal. Retractable landing gear; tail wheel fixed. Span, 35'; length, 26' 6"; height, 7' 6"; wing area, 174.3 sq. ft.; gross weight, 3,626 lbs. Power plant, 9-cyl. radial air-cooled Wright Whirlwind, 420 HP. 201 mph max. at sea level; service ceiling, 21,900'; range, 515 miles.

North American TEXAN (SNJ-3)

Photo Page 46

North American Aviation, Inc. Two-seat advanced trainer. Employed by Army as AT-6A and AT-6C and by RAF as *Harvard II*. Low-wing cantilever monoplane. Earlier models, like AT-6A, fabric-covered control surfaces, otherwise of chrome-moly steel and aluminum alloy. Later models, like AT-6C, with low alloy steels and other substitutes in place of high priority metals. Landing gear retractable; tail wheel fixed. Span, 42'; length, 29'; height, 11' 8.5"; wing area, 253.7 sq. ft.; gross weight, 5,250 lbs. Power plant, 9-cyl. radial air-cooled Pratt & Whitney Wasp, 550 HP. 205 mph max. at 5,000'; service ceiling, 23,000'; range, 730 miles.

Ryan RECRUIT (NR-1)

Ryan Aeronautical Co. Two-seat primary trainer. Similar to Army PT-21, 22. Low-wing braced monoplane; fabric-covered control surfaces, otherwise all-metal. Landing gear fixed. Span, 30' 1"; length, 22' 5"; height, 6' 10"; wing area, 134.25 sq. ft.; gross weight, 1,860 lbs. Power plant, 5-cyl. radial air-cooled Kinner, 160 HP. 131 mph max.; service ceiling, 15,500'; range, 350 miles.

Timm TUTOR (N2T-1)

Timm Aircraft Corp. Two-seat primary trainer. Low-wing cantilever monoplane; of plastic-bonded plywood construction (Duramold process). Fixed landing gear. Span, 36'; length, 24' 10"; height, 10' 8"; wing area, 185 sq. ft.; gross weight, 2,725 lbs. Power plant, 7-cyl. radial air-cooled Continental, 220 HP. 144 mph max.; service ceiling, 16,000'; range, 400 miles.

Vultee VALIANT (SNV-1, SNV-2)

Vultee Division of Consolidated Aircraft Corp. Two-seat basic trainer. SNV-1 similar to Army BT-13A, SNV-2 to BT-15. Low-wing cantilever monoplane; fabric-covered control surfaces, otherwise all-metal. Fixed landing gear. Span, 42'; length, 28' 7"; height, 9' 1"; wing area, 238 sq. ft.; gross weight, approx. 4,000 lbs. Power plant, 9-cyl. radial air-cooled Pratt & Whitney Wasp Jr. (SNV-1) or Wright Whirlwind (SNV-2), both 450 HP. 182 mph max. (SNV-1), 176 mph (SNV-2); service ceiling, 21,000'; range, 730 miles.

LIAISON PLANE

Piper GRASSHOPPER (NE-1)

Piper Aircraft Corp. Light observation and liaison two-seater. Employed by Army as L4-B. Resembles Cub trainer. High-wing braced monoplane; composite construction. Fixed landing gear. Span, 35' 2.5"; length, 22' 3"; height, 6' 8"; wing area, 178 sq. ft.; gross weight, 1,100 lbs. Power plant, 4-cyl. horizontally-opposed air-cooled Continental. 90 mph max.; absolute ceiling, 17,000'.

LIGHTER-THAN-AIR CRAFT

Goodyear G

Advanced trainer. First "Goodyear Defender" built October, 1929. New G model, in production since September, 1943. Has Continental air-cooled engine, direct drive; length 190'; helium capacity, 195,000 cu. ft.; crew, seven.

Goodyear L

Photo Page 47

Primary trainer. First built by Navy in 1938, went into production at Goodyear early in 1942. Length, 150'; helium capacity, 125,000 cu. ft. Direct drive. Crew, six.

Goodyear K

Photo Page 47

K-2 was developed by Goodyear in December, 1938. Originally powered by Wright Cyclone air-cooled radials, now by Pratt & Whitneys. Reduction gear drive. Length, 250'. Helium capacity, 425,000 cu. ft. Crew, eight.

Goodyear M

Photo Page 47

Production of M ships announced by Goodyear September, 1943. Length, 290'. Helium capacity, 650,000 cu. ft. Two Pratt & Whitney radial air-cooled engines, reduction gear drive; articulated sectional gondola accommodates crew of ten.

UNITED STATES - COAST GUARD

Besides its regular fleet (expanding toward 700 vessels, including 267 new harbor fireboats bringing many American harbors their first real fire protection), the Coast Guard is operating for the duration an aggregation of 1,658 reserve boats (privately owned vessels acquired by purchase, donation, enlistment of boat by owner, etc.) and more 215 sea-going Navy vessels (LCIs, LCTs, tankers, troop transports, SCs, PCs, frigates and DEs).

All Coast Guard craft over 65 feet in length are designated "cutters." Cutters are further divided into four categories: cruising cutters, that is, ocean-going craft (including certain Great Lakes cutters of ocean type); tender cutters, which maintain the thousands of aids to navigation under Coast Guard jurisdiction since merger of the Lighthouse Service and Coast Guard in 1939; patrol cutters, harbor and inshore craft; and harbor cutters, tugs strengthened for ice-breaking and the above-mentioned fireboats. Tender and harbor cutters, of course, continue their normal duties. Cruising cutters are now, however, operating with the Navy's ocean anti-submarine patrol; and patrol cutters, with the Navy district and inshore guard.

In May and June, 1941, the ten cutters of the 250-foot, 1,979-ton Chelan class, CGC-45 to 54, were transferred to Great Britain under lend-lease. (They are listed under British escort craft as the Lulworth class. Three of the ten, which the British renamed after British Coast Guard stations, have been lost). Ten cutters of patrol type were transferred to Cuba in 1942. Sixty-two other ex-CGCs of patrol type are on the Navy list as harbor and district craft. The Navy obtained them when Repeal reduced the number of law enforcers needed by the Coast Guard. Since the war, three other Coast Guard vessels, the famous icebreaker *Bear*, *Calypso* and an ex-Navy minesweeper, *Redwing*, have been turned over to the Navy. (*Redwing* has since been lost). The Presidential yacht *Potomac* is the ex-Coast Guard cutter *Electra*.

The list below covers only Cruising, Tender, Patrol and Harbor Cutters on the regular Coast Guard list before the war or, if built since, contracted for under Coast Guard appropriations. Certain other units, employed as merchant marine training ships when the merchant marine training program was under Coast Guard direction, are also listed here for convenience, as the agencies to which they have been assigned have not been announced. Reserve boats and craft under 65 feet in length are omitted, as are Coast Guard-manned Navy vessels, whose names have not been published and which belong under the Navy in any case.

CRUISING CUTTERS

4 North Wind Class Icebreakers

NORTH WIND (12/30/42), EAST WIND (1943), SOUTH WIND, WEST WIND. Building by Western Pipe & Steel Co., Los Angeles. Displacement: 5,950 tons. Dimensions: 250' x 59' 6" x 26' 6". Propulsion: Three screws (two stern, one bow), Diesel-electric drive, 10,000 HP. Speed unreported. Will probably carry one seaplane each.

The *North Wind* and her sisters are of all-welded construction with exceptionally thick plating and are designed to crush nine-foot ice (even heavier ice than the newest Soviet icebreakers are built to conquer). Note their extreme beaminess (length to width ratio, only a trifle more than four to one), and the Russian-pioneered bow screw for sucking water out from under ice ahead of ship, robbing it of support so that it may be more easily crushed. Although built on the West Coast, some of these vessels may be assigned to service on the Great Lakes.

13 Androscoggin Class

ANDROSCOGGIN, CHATAUQUA, HURON, IROQUOIS, KLAMATH, MENDOTA, OKEECHOBEE, OTSEGO, OWASCO, SUNAPEE, WACHUSETT, WINNEBAGO, WINONA. *Mendota* and *Okeechobee* building at Coast Guard yard, Curtis Bay, Md., others at Western Pipe & Steel Yard, Los Angeles. Displacement: 2,000 tons. Dimensions: 255' x 43' x 15'. Propulsion: Turbo-electric drive, 4,000 SHP. Speed: 18 kts. Armament unreported.

The Androscoggins, which are to be completed in 1944-5, are named mainly for Indian tribes (*Mendota*, however, is named for the late *H.M.S. Culver*, which was *Mendota* before her transfer from the Coast Guard to the British Navy in 1941). As such, they bear many names famous in American naval history, such as *Wachusett*, the screw sloop that caught the Confederate raider *Florida* during the Civil War. The Androscoggins will cost \$2,300,000 each without armament.

1 Eskimo Class Icebreaker

ESKIMO. Building by Toledo Shipbuilding Co., Toledo, O. Displacement: 1,715 tons. Length: 230'; other dimensions unreported. For service on the Great Lakes.

6 Campbell Class

GEORGE W. CAMPBELL, CGC-65 (1936); SAMUEL D. INGHAM, CGC-66 (1936); WILLIAM J. DUANE, CGC-67 (1936); ROGER B. TANEY, CGC-6B (1936); JOHN C. SPENCER, CGC-70 (1937); GEORGE M. BIBB, CGC-71 (1937). First four built by Philadelphia Navy Yard, fifth by New York Navy Yard and last by Charleston Navy Yard. Standard Displacement: 2,216 tons. Dimensions: 327' x 41' x 12' 6". Propulsion: Two screws, two sets geared turbines, 6,200 SHP. Speed: 20 kts. Armament, as of 1941 (may have been altered since): 3 5"/51; 3 3"/50 AA; 2 6-pounder; 2 quadruple MG; space for a fourth 5" provided, probably now mounted. (Campbell was armed experimentally for a short time with 10 3"/50 AA). Most are fitted to carry one seaplane.

Save for the North Winds, the Navy-built Campbells are the Coast Guard's largest cruising cutters. Generally similar in hull and machinery to the Navy gunboats *Erie* and *Charleston*, the Campbells are named for former secretaries of the Treasury. Three more are to be built, but their construction was indefinitely postponed in 1941. A seventh, *Alexander Hamilton*, CGC-69, was torpedoed off Iceland in 1942. She capsized and had to be sunk by American gunfire as a menace to navigation. Her sisters, however, have done yeoman work on anti-submarine patrol, for which they are well fitted (cruising radius, 12,300 miles, one and a half roundtrips across the Atlantic, at 11 knots). Campbell sank a U-boat by ramming in the North Atlantic in 1943, one of the comparatively few instances of actual ramming in anti-U-boat warfare. Campbell, assigned to European waters on Oct. 1, 1940, where she operated under naval direction, was the first Coast Guard vessel to be placed under the Navy (the proclamation making the Coast Guard, as a whole, part of the Navy did not come until the following month).

5 Algonquin Class

ALGONQUIN, CGC-56; COMANCHE, CGC-57; MOHAWK, CGC-58; ONONDAGA, CGC-59; TAHOMA, CGC-60 (all 1934). First three built by Pusey & Jones, Wilmington, Del., last two, by Defoe Works, Bay City, Mich. Standard Displacement: 1,005 tons. Dimensions: 165' x 36' x 13' 7". Propulsion: Single screw, geared turbines, 1,500 HP. Speed: 13.5 kts. Armament: 2 3"/23; 6 MG.

The Algonquins are strengthened for ice navigation and are said to be excellent ice boats, capable of steady headway through two-foot ice. A sixth vessel of the class, *Escanaba*, CGC-55, was lost in June, 1943.

1 North Star Class

NORTH STAR (1932). Wood. Displacement: 2,200 tons. Dimensions: 225' x 41' (draft unreported). Propulsion: Diesels, 1,500 HP. Speed: 13 kts. No other details available.

1 Northland Class

NORTHLAND, CGC-44 (1927). Built by Newport News Shipbuilding. Standard Displacement: 2,065 tons. Dimensions: 216' x 39' x 15'. Propulsion: Single screw, two sets Diesels, electric drive, 1,200 HP. Speed: 11 kts. Armament: 2 3"/50; 10 MG. Carries a seaplane.

The *Northland* made the first American capture of an enemy ship in World War II, when she surprised and took a Nazi weather and radio station ship, *Boscoe*, on the east coast of Greenland, in November, 1940, a few days after the Coast Guard was placed under the Navy. The *Northland* was built originally for the Bering Sea Patrol and has exceptionally thick plating and stout internal construction to withstand ice pressure. She has no funnel, small exhaust vents abaft the bridge-house serving in its place. During the 'thirties, she served as a seagoing training ship. Her armament was strengthened when she was assigned to Atlantic patrol shortly after proclamation of the Neutrality Zone.

1 Shawnee Class

SHAWNEE, CGC-40 (1922). Built by Union Construction Co., Oakland, Calif. Displacement: 900 tons. Dimensions: 158' 3" x 30' x 13' 10". Originally 1,800 HP and 13 kts., reported increased to 16 kts. as result of refit in 1938. Armament: 2 1-pounder.

4 Tampa Class

TAMPA, CGC-36; HAIDA, CGC-37; MOJAVE, CGC-3B; MODOC, CGC-39 (all 1921). Built by General Engineering & Drydock, Oakland, Calif. Standard Displacement: 1,780 tons. Dimensions: 240' x 39' x 16' 6". Propulsion: Single screw, turbo-electric drive, 2,600 SHP. Speed: 15 kts. Armament: 2 5"/51; 2 3" AA; 6 MG.

Tampa bears the name of the largest Coast Guard vessel lost during the last war.

7 of Various Types

CARRABASSET (1919). Ocean-going tug. Standard Displacement: 1,133 tons. Dimensions: 155' 10" x 30' x 17' 7". 1,800 HP. Speed: 11.9 kts. Armament: 2 1-pounder.

KICKAPOO (1919). Standard Displacement: 840 tons. Dimensions: 157' 4" x 35' x 12'. 1,000 HP. Speed: 11 kts. Armament: 2 1-pounder. Strengthened for ice navigation.

OSSIPEE, CGC-26 (1915). Standard Displacement: 997 tons. Dimensions: 165' 10" x 32' x 11' 9". Propulsion: Single screw, 1,000 HP. Speed: 12 kts. Armament: 2 3"/23; 6 MG.

TALLAPOOSA, CGC-27 (1915). Standard Displacement: 964 tons. Dimensions: 185' 10" x 32' x 11'. Propulsion: Single screw, 1,000 HP. Speed: 12 kts. Armament: 2 3"/23; 6 MG. Tallapoosa and Ossipee are near-sisters.

UNALGA, CGC-23 (1912). Standard Displacement: 1,181 tons. Dimensions: 190' x 32' x 14' 2". 1,000 HP. Speed: 13 kts. Armament: 2 3"/23; 6 MG.

PAMLICO, CGC-13 (1907). Standard Displacement: 455 tons. Dimensions: 158' x 30' x 5' 8". 600 HP. Speed: 10 kts. Armament: 2 6-pounder.

ATLANTIC (1903). 303 tons gross. Dimensions: 185' x 29' 6" x 17' 6". Reciprocating engines.

TENDER CUTTERS

14 Cactus Class

Marine Iron & Shipbuilding, Duluth: CACTUS (11/25/41), CITRUS (B/15/42), CLOVER (1942), COWSLIP (1942), CONIFER (1943), MESQUITE, BUTTONWOOD.

Zenith Dredge Co.: BALSAM (1942), GENTIAN (1942), LAUREL (8/4/42), MADRONA, SORREL, TUPELO, WOODBINE.

Standard Displacement: 935 tons. Dimensions: 180' x 37' x 12'. Propulsion: Diesel-electric, 1,000 HP. Speed: 13 kts. Armament unreported. To serve as lighthouse tenders.

7 Birch Class

BIRCH, COTTONWOOD, DOGWOOD (6/16/41), FIR, MAPLE, POPLAR, SYCAMORE (6/16/41). Length: 113'. No other particulars reported.

67 of Various Types

FERN. Built by Petersen & Haecker, Ltd. Length: 114'. Fitted for icebreaking.

BARBERRY, COSMOS (Both Dubuque Boat & Boiler Co., 1942). Length: 110'. For use on inland waterways.

OLEANDER (Jefferson Boat & Machine Co., 5/24/41). Length: 73'. For river patrol duties.

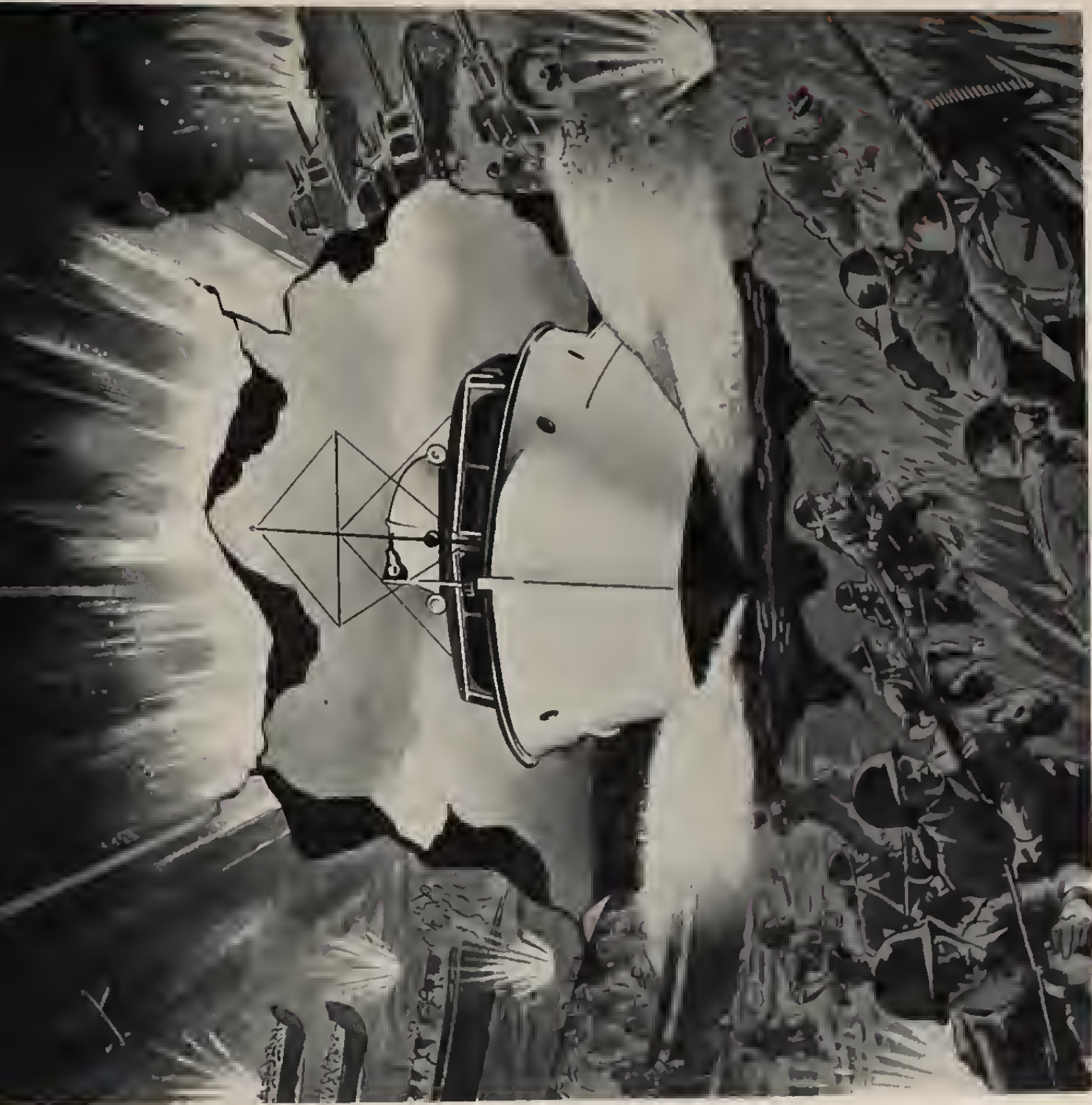
JUNIPER (Mathis Yard, Camden, N. J., 5/18/40). Ocean-going lighthouse tender. Displacement: 790 tons. Length: 177'. Propulsion: Two screws, Diesel-electric drive, 1,000 HP.

WALNUT (Mcroe Drydock Co., 1939). Displacement: 880 tons. Dimensions: 175' x 32' x 10' 6". Propulsion: Reciprocating engine, 1,000 HP. Speed: 12 kts.

BATAAN. Philippine Patrol Service vessel transferred to the Coast Guard. No details available. Name may have been changed to avoid confusion with new aircraft carrier *Bataan*.

PEQUOT (ex-Gen. Samuel M. Mills, 1909). Former Army mineplanter, transferred to Coast Guard in 1922. Displacement: 950 tons. Dimensions: 166' 6" x 32' 6" x 11' 4". Single screw, 12 kts.

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39 Lightships

At the end of the fiscal year 1941, the Coast Guard also operated 30 lightships and nine relief lightships.

HARBOR CUTTERS

267 Fireboats

In 1942, the Coast Guard contracted for the construction of 267 fireboats to protect American harbors against any occurrence similar to the Halifax disaster of the last war. They are bringing to many cities the first real protection against fire they have ever had, for comparatively few had effective marine firefighting forces such as the famed marine division of the New York City Fire Department.

6 Raritan Class

Defoe Works, Bay City, Mich: RARITAN, CGC-72; NAUGATUCK, CGC-73 (both 3/22/39).

Gulfport Works, Port Arthur, Tex.: ARUNDEL, CGC-74 (6/24/39); MAHONING, CGC-75 (7/22/39).

Coast Guard yard, Curtis Bay, Md.: KAW (1942); MANITOU (9/29/42).

Displacement: 328 tons. Dimensions: 110' x 26' 6" x 10' 6". Propulsion: Diesel-electric, 1,000 SHP. Speed: 12 kts. Strengthened for icebreaking. Also employed to control anchorage and movement of vessels. Are improved editions of Calumet class.

4 Calumet Class

Charleston Navy Yard: CALUMET, CGC-61; NAVESINK, CGC-63; TUCKAHOE, CGC-64 (all 1934).

Portsmouth Navy Yard: HUDSON, CGC-62 (1934).

Displacement: 290 tons. Dimensions: 110' 6" x 24' x 10' 6". Propulsion: Single screw, Diesels, 800 HP. Speed: 12 kts. Strengthened for icebreaking.

5 of Various Types

MANHATTAN (1918). Displacement: 406 tons. Dimensions: 120' 3" x 24' x 11' 9". Speed: 9.5 kts. Armament: 2 1-pounders. Strengthened for ice navigation. Equipped for salvage, fire and tug duties.

DAVEY (1908). Displacement: 182 tons. Dimensions: 92' 6" x 19' x 10' 2". Single screw, 10.5 kts.

WINNISIMMET (1903). Displacement: 182 tons. Dimensions: 96' 6" x 20' 6" x 9'. Speed: 12 kts.

GOLDEN GATE (1896). Displacement: 240 tons. Dimensions: 110' x 20' 6" x 9'. 300 HP.

GUTHRIE (1895). Iron. Displacement: 149 tons. Dimensions: 88' x 17' 6" x 9'. Single screw, 11 kts.

PATROL CUTTERS

16 165-foot Type

ARGO, ARIADNE, ATALANTA, AURORA, CYANE, DAPHNE, DIONE, GALATEA, HERMES, ICARUS, NEMESIS, NIKE, PANDORA, PERSEUS, THETIS, TRITON (all 1931-4). Standard Displacement: 337 tons. Dimensions: 165' x 25' 3" x 9' 6". Propulsion: Two screws, Diesels, 1,300 HP. Speed: 16.5 kts. Armament: 1 3"/23; 2 1-pounder.

Calypso, a seventeenth vessel of the Argo class, was transferred to the Navy in 1941. *Electra*, an eighteenth, is now the Presidential yacht *Potomac*. *Icarus* sank a German submarine in the spring of 1943 and captured 33 of her crew. The Argos are the same length as the cruising cutter *Algonquin* and her sisters, but more than 11 feet narrower, drawing more than four feet less water and displacing only a third as much, are three knots faster, despite engines of less power.

33 125-foot Type

ACTIVE, AGASSIZ, ALERT, ANTIETAM, BONHAM, BOUTWELL, CAHOONE, CARTIGAN, COLFAX, CRAWFORD, CUYAHOGA, DILIGENCE, DIX, EWING, FAUNCE, FREDERICK LEE, GENERAL GREENE, HARRIET LANE, JACKSON, KIMBALL, LEGARE, MARION, McLANE, MORRIS, NEMAHA, PULASKI, RELIANCE, RUSH, TIGER, TRAVIS, VIGILANT, WOODBURY, YEATON (all built 1926-7). Standard Displacement: 220 tons. Dimensions: 125' x 23' 6" x 9'. Propulsion: Twin screws, Diesels, 300 HP (more in many units of class which have been re-engined). Speed: 14 kts. or more (in re-engined units). Armament: 1 3"/23.

Kimball and *Yeaton* have been used as training craft. *Active*, *Colfax*, *Crawford*, *Ewing*, *Harriet Lane*, *Legare*, *McLane*, *Vigilant* and *Woodbury* used as buoy tenders before the war. *Cuyahoga* was returned to the Coast Guard in 1941 after eight years in the Navy.

1 100-foot Type

PHLOX (ex-*Nansemond*, Defoe Boat Works, 1926). Standard Displacement: 210 tons. Dimensions: 99' 8" x 23' x 8'. Propulsion: Two screws, Diesels, 350 HP. Speed: 11 kts. Armament: 1 3"/23.

124 or more 83-foot Type

CGC-444-579 (1938-42). Wood. Standard Displacement: 45 tons. Dimensions: 83' 1" x 16' x 4' 6". Two gasoline engines, 1,200 HP. 20.5 kts. Armament: 1 3"/23. A great many of these vessels were built by the Wheeler Yard, Brooklyn, N. Y. Cost, \$42,450 to \$58,000 each. Twelve of this type were transferred to Cuba under lend-lease in 1942, numbers not released.

11 80-foot Type

CGC-406-15, 490 (Jacksonville, Fla., 1937). Wood. Standard Displacement: 47 tons. Dimensions: 80' 9" x 15' 8" x 4'. All powered by four gasoline engines, except CGC-415, which has semi-Diesels. Two screws, 1,600 HP. 25 kts. Armament: 1 1-pounder.

47 78-foot Type

CGC-400-405 (Newport News, 1931) and approximately 41 others, ordered under war program. Wood. Standard Displacement: 43 tons. Dimensions: 78' 9" x 14' 5" x 4'. Powered by twin gasoline engines, 1,070 HP. 21.7 kts. Armament: 1 1-pounder.

About 45 75-foot Type

45 bearing numbers between CGC-119 and 288 (1924-S). Wood. Standard Displacement: 37 tons. Dimensions: 74' 11" x 13' 8" x 4'. One gasoline engine, 400 HP. 13.5 kts. Armament: 1 1-pounder.

CGC-274 of this type was sold to Nicaragua in 1938. Three more, CGC-110, 144, and 302, were transferred to the Dominican Republic in 1942.

3 72-foot Type

CGC-439-441 (Annapolis, Md., 1933-37). Wood. Standard Displacement: 31 tons. Dimensions: 72' x 15' 2" x 3' 7". Two screws, four gasoline engines, 1,600 HP. 34 kts. No armament reported before the war.

2 65-foot Type

CGC-442, 443 (Long Beach, Calif., 1937). Wood. Displacement: 30 tons. Dimensions: 65' x 14' x 3' 9". Twin screws, four gasoline engines, 1,600 HP. 28 kts.

42 AB Boats

The Coast Guard also has a large number, last reported to be 42, of small, low-speed vessels for anchorage patrol and boarding duties. They are designated A8 and bear numbers from 1 to 68.

MISCELLANEOUS AUXILIARIES

Several of the vessels below were employed on merchant marine training duties when merchant marine training was the responsibility of the Coast Guard and have since been transferred to other agencies. They are listed here, however, as details of the transfers have not been reported.

ALIMAR (ex-*Alycia*, ex-*Challenge*, ex-*Charmarie*, ex-*Mawilma*, 1930). Wood. 55' x 11' 6" x 3' 3". Two screws, gasoline engines.

AMERICAN MARINER (12/30/41), AMERICAN SAILOR (ex-*Edgemont*, 1919), AMERICAN SEAMAN (ex-*Edgemoor*, 1919). 7,000, 6,865 and 7,038 tons gross respectively. Dimensions: 409' 6" x 54' 2" x 27'. Single screw, geared turbines, 2,500 SHP. 11 kts. Have facilities for 300 apprentice seamen each, also distilling plant capable of distilling 104,000 gallons of fresh water a day.

BROADWATER (1939). 21 tons gross. 44' 6" x 11' x 3'. Two screws, Diesels.

INNISFAIL (1939). Wood. 114 tons gross. 90' x 18' x 4' 6". Two screws, Diesels.

JOSEPH CONRAD (ex-*Georg Stage*, Copenhagen, 1882). 182 tons gross. 100' 9" x 25' 3" (draft unreported). Sailing vessel, with auxiliary motor, 160 HP.

JOSEPH CONRAD II (1937). Wood. 24 tons gross. 50' x 13' x 2' 9". Gasoline-powered.

NENEMOOSHA (1925). 232 tons gross. 130' x 22' 3" x 7' 3". Two screws, Diesels.

SEA CLOUD (ex-*Hussar*, 1930). 2,323 tons gross. 316' x 49' x 25'. Two screws, Diesels, 3,000 HP.

SEALOVE (1924). Wood. 26 tons gross. 62' 3" x 14' x 8'. Gasoline powered.

TUSITALA (ex-*Sophie*, ex-*Sierra Lucena*, ex-*Inveruglas*, Greenock, 1883). Iron. 1,748 tons gross. 260' x 39' (draft unreported). Sailing vessel, auxiliary Diesel. Flew Swiss flag during last war.

VEMA (ex-*Hussar*, 1923). 533 tons gross. 202' 6" x 33' x 14' 6". Three-masted schooner, acquired 1941. Auxiliary Diesel.

UNITED STATES - COAST GUARD AIRCRAFT

The Coast Guard's rapidly growing aviation section, which was scheduled to assume many of the Navy's inshore patrol activities during 1944, operates standard types of shore-based Navy aircraft. Among them are Consolidated-Vultee Catalinas or PBYs, Grumman J4Fs (Widgeons) and JRFs, Martin Mariners or P8Ms. In addition the Coast Guard operates two types of older amphibians, which are no longer in production. Specifications of these two types are as follows.

Douglas RD

Douglas Aircraft Co., Inc. Utility amphibian. Similar to civil *Dolphin*. High-wing monoplane flying boat. Composite construction. Engines mounted on struts above wing. Span, 60'; length,

45' 1"; height, 14'; wing area, 592 sq. ft.; gross weight, 9,500 lbs. Power plants, two 9-cyl. radial air-cooled Pratt & Whitney Wasps, 450 HP each. 156 mph max.; service ceiling, 19,800'; range, 720 miles.

Hall-Aluminum PH-2, PH-3

Hall-Aluminum Aircraft Co. Utility amphibian. Biplane flying boat. Wings and control surface fabric-covered, otherwise all-metal. Span, 72' 10"; length, 51'; height, 17' 11"; wing area, 1,170 sq. ft.; gross weight, 16,457 lbs. Power plants, two 9-cyl. radial air-cooled Wright Cyclones, 750 HP each. 155.2 mph max. at 3,200'; service ceiling, 22,200'; range, 2,200 miles. Can take off and land in rough water.

THE ARMY'S NAVY

Paradoxical as it may seem, the U. S. Army is one of the world's largest operators of water-borne equipment. At the beginning of 1944, its fleet numbered nearly 8,000 vessels and was still growing rapidly. Army ships are generally types so closely related to Army functions as a land fighting machine that they could not be operated conveniently by the Navy or private contractors under War Department contract. The great majority are small, such as the Engineers' assault boats for crossing rivers and the like, but there are also many ocean-going craft and even large transports. Nearly all fall into the category of "logistical vessels," i.e., boats for moving men, arms and supplies from place to place, under fire and behind the lines. The Army, however, even has a few "combat craft"—anti-submarine patrol boats operated by the Army Air Forces and Coast Artillery in the environs of airfields and harbor minefields.

The principal Army ship operators are the Engineers, who have an extensive fleet not only for forcing river crossings and the like (the function of the Engineer Amphibious Command and its boat regiments), but also to carry out their extensive duties of maintaining our inland waterways; Army Air Forces, which operate not only innumerable cargo vessels for supplying airfields and other Air Force stations most easily reached by water, but also a large fleet of crash, rescue and salvage boats; the Coast Artillery, which plants harbor minefields (a function carried out by navies in other countries); and the Transportation Corps, which has the largest fleet. The Transportation Corps procures all four branches' vessels. In 1942, 2,200 boats and ships, from 16' 3" draft, airplane propeller powered "swamp gliders" for Air Forces rescue work, to large troop transports, were built under the TC's contracts; in 1943, the total was 3,900. Most Army vessels are operated by soldier-crews, who wear blue denim and white sailor caps; troop transports, however, have merchant crews. Not the least of the Army's problems has been obtaining skilled water personnel; the Navy naturally attracts virtually all skilled sailors and boatmen who turn up at draft induction centers throughout the country. Needless to say, all Army vessels entering combat zones are armed.

TRANSPORTS

A large number of troop transports have been acquired or built for the Army, aside from the 14 turned over to the Navy by the Army in July and August, 1941. The only name so far reported, however, is *Henry Gibbons* (a Navy cargo ship of the same name is also reported). In addition, the "General" series of transports of the largest size, and the *Frederick Funston*, listed under Navy transports, may prove to be War Department-owned craft. Army troop transports are all operated by the Ship Operations Branch of the Transportation Corps.

MINE PLANTERS

The Coast Artillery has a large fleet of 188' mine planters or coastal minelayers, as they would be rated if they were Navy vessels. These lay and maintain harbor minefields, which are of the electrically controlled type and operated as part of U. S. coast defenses, the responsibility of the Coast Artillery. Only name so far reported, ——— *Schofield*. Among shipbuilders turning them out is the Marietta Manufacturing Co. on Lake Erie. An Army mine planter of different type and possibly of smaller size is typified by the *Ellery W. Niles*, specifications unknown.

OCEAN RETRIEVERS

The Army Air Forces operate at least two types of ocean-going rescue and salvage vessels. These are high-speed craft, with derricks, life-saving and first-aid equipment. Lengths, 150' (steel) and 104'. Col. James C. Morrow, 150' type, was built by Sturgeon Bay Shipbuilding, Sturgeon Bay, Wis.

OCEAN-GOING TUGS

The Transportation Corps fleet operates a large number of 149' steel ocean-going tugs.

AIRCRAFT RESCUE BOATS

Army Air Forces have a large fleet of smaller rescue boats. Types of vessels so far reported and some of their manufacturers: 16' airplane-propeller powered, 3" draft "swamp glider"; 22' shallow draft boat; 24' plane retrieving yawl; 36' and 42' rescue boats; B3' rescue boat, built by Ventnor Boat; 100' rescue boat, Brownsville Shipbuilding.

CARGO BOATS

Army Air Forces and the Transportation Corps fleets of cargo boats include following types of vessels: 65', built by Sturgeon Bay Boat Works, among others; 99', Diesel-powered, Equitable Equipment Co.; 115', Northwestern Shipbuilding and M. M. Davis & Son; 136'; 140', Minneford Yacht Yard; 16B'.

TUGS AND TOWBOATS

To pull their huge fleets of unpropelled barges, Army Air Forces and Transportation Corps operate following types of tugs and towboats: 26' towboat; 35' (wood); 45' (wood); 46' (wood), Northeast Shipbuilding and others; 47' (wood); 50' (steel); 74' (steel), one name reported, Zimmerman, Livingston Shipbuilding; B2'; B5' (steel); 102'; 107'; 123' (steel); 126' (wood).

SELF-PROPELLED BARGES

Five types of Army self-propelled barges, operated again by the Transportation Corps and Air Forces, have been listed: 105' in length; 150'; 162'; 176'; 180'.

DISTRIBUTION BOX BOATS

To plant and maintain the elaborate distribution boxes (electrical junctions) of controlled minefields, the Coast Artillery has a fleet of specially designed 64' wood boats resembling small tugs in appearance and with crane equipment.

OFFSHORE PATROL BOATS

The Coast Artillery and Army Air Forces operate a large number of 37' anti-submarine offshore patrol boats. No other particulars available.

MISCELLANEOUS

Among other types of Army vessels are: mine yawls (26'); barrage balloon barges; barrage balloon boats; assault boats; command boats; patrol boats, launches and motor skiffs of various sizes up to 60' in length; fire boats of Higgins Eureka type (see Navy landing craft); and a colossal assortment of barges, both of cargo and tanker type. Most unpropelled barges are fitted for installation of outboard motors.

GREAT BRITAIN - BATTLESHIPS

4 Lion Class

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------|--------------------------|-----------|----------|-------|
| LION | Vickers-Armstrong (Tyne) | 7/ 4/39 | | 1943? |
| TEMERAIRE | Cammell Laird | 6/ 1/39 | | 1943? |
| 1 ship | Clydebank | 1939 | | 1944? |
| 1 ship | Fairfield | 1939 | | 1944? |

Standard Displacement: c. 40,000 tons.

Speed*: 30 kts.

Dimensions: 781' x 105' x 30'.

Main Armament: 9 16" in triple turrets.

The Lions (the last two of which may be named *Beatty* and *Jellicoe*, names originally assigned to two King George V battleships) are Britain's reply to the 40,000-tonners Japan has reputedly built but which so far have seen no action. Their construction has been delayed by Britain's limited shipbuilding capacity (from shortage of steel and labor and the impossibility of night work, owing to the blackout) and greater need of anti-submarine and other escort vessels.

4 King George V Class

Photo Pages 109, 110

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------------------|------------------|-----------|----------|-------|
| KING GEORGE V | Vick-Arm. (Tyne) | 1/ 1/37 | 2/21/39 | 1940 |
| DUKE OF YORK (ex-Anson) | Clydebank | 3/ 5/37 | 2/2B/40 | 1941 |
| ANSON (ex-Jellicoe) | Swan Hunter | 7/20/37 | 1940 | 1942 |
| HOWE (ex-Beatty) | Fairfield | 6/ 1/37 | 11/11/39 | 1942 |

Standard Displacement: 35,000 tons. Dimensions: 739' B" (perpendiculars) x 103' x 27' B".

Propulsion: Four screws, geared turbines, 152,000 SHP. Speed: in excess of 30 kts.

Armament: 10 14" in one twin and two quadruple turrets; 16 5.25" DP in twin turrets; numerous Bofors 40 mm AC and other AA. Armor*: 16" belt. Total weight of armor*, 14,000 tons. Planes: 4. Catapults: 1.

The King George Vs, of which once there were five, the other one being the late *Prince of Wales*, are Britain's first modern capital ships, like the U. S. North Carolinas, begun as replacements for older vessels under the Washington treaty. The *King George V* itself has been in frequent action in the Mediterranean. The other ships in the class have also been in action, but no information has been released. When the *King George V* brought British Ambassador Lord Halifax to the U. S. in 1941, its AA included peculiar box-like affairs which are believed to have housed an experimental AA rocket launcher of large caliber. These have since been removed.

2 Nelson Class

Photo Page 108

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|--------------------------|-----------|----------|-------|
| NELSON | Vickers-Armstrong (Tyne) | 12/2B/22 | 9/ 3/25 | 6/27 |
| RODNEY | Cammell Laird | 12/2B/22 | 12/17/25 | B/27 |

Standard Displacement: 33,950 (*Nelson*), 33,900 (*Rodney*). Dimensions: 710' x 106' x 30'.

Propulsion: Two screws, geared turbines, 45,000 SHP. Speed: 23 kts.

Armament: 9 16" in triple turrets; 12 6" in twin turrets; 6 4.7" AA. Numerous Bofors 40 mm AC and other AA probably added. 2 24.5" TT. Armor: 14" belt, 16" turret faces, 6.25" deck. Planes: *Rodney* 2, *Nelson* 1. Catapults: *Rodney* 1, *Nelson* 0.

The *Rodney* and *Nelson* were the first full-sized battleships built within the 35,000-ton capital ship limit of the Washington Treaty. The peculiar arrangement of all main guns forward was resorted to in order to group magazines and ammunition conveyors, which must be heavily protected with armor, thus saving weight. Both ships took part in the eradication of the *Bismarck*. They enjoy reputations as unusually good fighting ships in heavy seas.

1 Renown Class

Photo Pages 114, 115

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|-----------|-----------|----------|-------|
| RENOWN | Fairfield | 1/25/15 | 3/ 4/16 | 9/16 |

Standard Displacement: 32,000 tons. Dimensions: 794' 1.5" x 102' B" x 26' B".

Propulsion: Four screws, geared turbines, 129,000 SHP. Speed: 29 kts.

Armament: 6 15" in twin turrets, 20 4.5" DP in twin turrets. Numerous Bofors 40 mm AC and other AA probably added. Armor: no details. Planes: 4. Catapults: 1.

The *Renown* is a battle cruiser rather than a battleship, the last of the lightly armored, but fast, big gun ships introduced by the British Navy's First Sea Lord Fisher in the naval race that preceded the first World War. Such ships are no longer built, partly because it is not now necessary to make extreme sacrifices of armor or guns to gain speed and partly because they are not a successful type. The British lost three battle cruisers in a few hours at Jutland; the *Hood* in a few minutes in Denmark Strait when a shell from the *Bismarck* penetrated the *Hood*'s inadequately protected magazines; and the *Repulse*, the *Renown*'s sister, to Jap torpedo bombers off Malaya. The *Renown* was completely rebuilt in 1936-39, but still suffers from the Jutland battle cruiser's faults.



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4 Queen Elizabeth Class

Photo Pages 111, 112, 113

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------------|------------|-----------|----------|-------|
| QUEEN ELIZABETH | Portsmouth | 10/12 | 10/16/13 | 1/15 |
| WARSPITE | Devonport | 10/12 | 11/25/13 | 3/15 |
| VALIANT | Fairfield | 1/13 | 11/ 4/14 | 2/16 |
| MALAYA | Elswick | 10/13 | 3/1B/15 | 2/16 |

Standard Displacement: 30,600 tons (*Warspite*), 31,100 (others). Dimensions: 643' 9" (*Queen Elizabeth* and *Warspite*), 639' 9" (others) x 104' x 30' 8".

Propulsion: Four screws, geared turbines, 80,000 SHP. Speed: 24 kts.

Armament: 8 15"/42 in twin turrets. Secondaries, *Queen Elizabeth* and *Valiant*, 20 4.5" DP in twin turrets; *Warspite*, 8 6"/50, 8 4" AA in twin turrets; *Malaya*, 12 6"/50, 8 4" AA in twin turrets. *Warspite* and *Malaya* possibly rearmed with 5.25" DP in place of secondaries listed. Bofors 40 mm AC, other AA probably added to all four ships. Armor: 13" belt, 11" turret faces. Planes: 4. Catapults: 1.

This group of ships, of which the recently lost *Barham* was a sister, is Britain's most battle-scarred flotilla. Its members all took part in the Battle of Jutland, the *Warspite* coming out with heavy damage. In the present war, the *Warspite* led the British raid on Narvik in which an entire Nazi destroyer flotilla was wiped out. The *Valiant* and *Warspite* both also took part in the Battle of Cape Matapan in the Mediterranean.

4 Royal Sovereign Class

Photo Pages 114, 115, 116

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------------|---------------------|-----------|----------|-------|
| ROYAL SOVEREIGN | Portsmouth | 1/14 | 4/29/15 | 5/16 |
| RESOLUTION | Palmer | 11/13 | 1/14/16 | 12/16 |
| RAMILLIES | Beardmore | 11/13 | 9/12/16 | 9/17 |
| REVENGE | Vickers-Arm. (Tyne) | 12/13 | 5/29/16 | 3/16 |

Standard Displacement: 29,150 tons. Dimensions: 624' 6" (*Revenge*), 620' 6" (others) x 102' 6" x 28' 6".

Propulsion: Four screws, direct drive turbines, 40,000 SHP. Speed: 21.5 kts.

Armament: 8 14"/42; 12 6"/50; 8 4" AA. 2 21" TT in *Revenge*. Secondary armament possibly replaced by 5.25" DP, certainly supplemented by numerous Bofors 40 mm AC, other AA. Armor: 13" belt, 13" turret faces. Planes: 1 on *Resolution*, others 0. Ditto catapults.

The *Royal Oak*, sunk in Scapa Flow, was of this class. The Royal Sovereigns were all modernized during the 'thirties and have probably been refitted again, since the outbreak of the war.

GREAT BRITAIN - CRUISERS

1 Norfolk Class

Photo Page 124

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|-----------|-----------|----------|-------|
| NORFOLK | Fairfield | 7/27 | 12/12/2B | 6/30 |

Standard Displacement: 9,925 tons. Dimensions: 630' x 66' x 17'.

Propulsion: Four screws, four sets geared turbines, 80,000 SHP. Speed: 32.25 kts.

Armament: 8 6"/50 in twin turrets; 8 4" AA; numerous smaller AA. 2 21" TT in quadruple mounts. Armor: 3"-5" belt; 1.5"-3" deck. Planes: 1. Catapults: 1.

The *Norfolk* is currently Great Britain's most modern heavy cruiser, the only later type built by Britain, the *Exeter*, and *York* having been lost, as has also the *Dorsetshire*, sister of the *Norfolk*. Great Britain does not believe in heavy cruisers, finds them ill-suited to the naval tasks imposed by a world-wide empire and sea war. They were built primarily for fleet cooperation with the 10,000-ton U. S. heavies. (U. S. heavy cruisers likewise have been less successful than light cruisers.) So, after 1930, no more British heavies were built. Two more of the *Norfolk* class, in fact, the *Surrey* and *Northumberland*, were cancelled.

3 London Class

Photo Pages 124, 125

| Name | Builder | Keel Laid | Launched | Comp. |
|------------|------------|-----------|----------|---------|
| LONDON | Portsmouth | 2/22/26 | 9/14/27 | 2/ 5/29 |
| DEVONSHIRE | Devonport | 3/16/26 | 10/22/27 | 3/19/30 |
| SUSSEX | Hawthorn | 2/26 | 2/22/2B | 3/26/29 |

Standard Displacement: 9,830 tons (*Sussex*), 9,850 (others). Dimensions: 633' x 66' x 17'.

Propulsion: Four screws, four sets geared turbines, 80,000 SHP. Speed: 32.25 kts.

Armament: 8 6"/50 in twin turrets; 8 4" AA; numerous smaller AA. 2 21" TT in quadruple mounts. Armor: 3"-5" belt; 1.5"-3" deck. Planes: 1. Catapults: 1.

A fourth member of the London class, the *Shropshire*, is now part of the Australian Navy, a gift of the British government to replace the *Canberra*.

4 Kent Class

Photo Page 125

| Name | Builder | Keel Laid | Launched | Comp. |
|------------|------------|-----------|----------|---------|
| SUFFOLK | Portsmouth | 9/30/24 | 2/16/26 | 2/ 7/2B |
| KENT | Chatham | 11/15/24 | 3/16/26 | 6/25/2B |
| CUMBERLAND | Vickers | 10/1B/24 | 3/16/26 | 1/28 |
| BERWICK | Fairfield | 9/15/24 | 3/30/26 | 2/ 2/2B |

Standard Displacement: 10,000 tons. Dimensions: 630' x 68' 6" x 16' 3".

Propulsion: Four screws, four sets geared turbines, 80,000 SHP. Speed: 31.5 kts.

Armament: 8 6"/50 in twin turrets; 8 4" AA, four in twin gunhouses, balance singly mounted; numerous smaller AA. Armor: 3"-5" belt; 1.5"-3" deck. Planes: 4. Catapults: 1.

Of the Kent class, modernized in 1935-193B, one, the *Australia*, belongs to the Australian navy, and another, the *Cornwall*, has been sunk. Chief alterations include removal of torpedo tubes, addition of three planes, large hangar and housing for some of the larger AA guns. To compensate for the additional weight, the upper deck of some of the vessels was cut down.

3 Hawkins Class

Photo Page 126

| Name | Builder | Keel Laid | Launched | Comp. |
|------------------------------------|-----------------|-----------|----------|---------|
| HAWKINS | Chatham | 6/16 | 10/ 1/17 | 7/25/19 |
| VINDICTIVE (ex. <i>Cavendish</i>) | Harland & Wolff | 6/29/16 | 1/17/1B | 19/1B |
| FROBISHER | Devonport | 8/ 2/16 | 3/20/20 | 9/20/23 |

Standard Displacement: 9,800 tons (*Hawkins*), 9,100 (*Vindictive*), 9,860 (*Frobisher*). Dimensions: 605' x 65' x 17' 3".

Propulsion: Four screws, four sets geared turbines, 55,000 to 65,000 SHP (varies from ship to ship). Speed: 29.5-30.5 kts.

Armament: 7 7.5"/45 (*Vindictive*), 7.5"/50 (others); 4 4" AA; numerous smaller AA. 4 21" TT. Armor: 2"-3" belt; 1"-1.5" deck. Planes and catapult to have been added, 1940.

The *Effingham* of this type is a war casualty; another Hawkins was the *Raleigh*, lost in 1922. The *Vindictive* was demilitarized and employed as a training cruiser between wars, but has since been rearmed and returned to unspecified duties.

9 or more Mauritius Class

Photo Page 120

| Name | Builder | Keel Laid | Launched | Comp. |
|--------------|-----------------|-----------|----------|-------|
| NIGERIA | Vickers, Tyne | 2/ B/3B | 7/1B/39 | 1940 |
| MAURITIUS | Swan Hunter | 3/31/3B | 7/19/39 | 1940 |
| KENYA | Stephen | 6/1B/3B | B/1B/39 | 1940 |
| CEYLON | Stephen | | 1940 | 1942 |
| GAMBIA | Swan Hunter | | 1940 | 1942 |
| JAMAICA | Vickers, Barrow | | 1940 | 1942 |
| UGANDA | Vickers, Tyne | | 1940 | 1942 |
| BERMUDA | | | 1941 | 1942 |
| NEWFOUNDLAND | Swan Hunter | | 1941 | 1942 |

Standard Displacement: 8,000 tons.

Dimensions: 549' x 62' x 16' 6".

Propulsion: Four screws, four sets geared turbines, 72,500 SHP. Speed: 33 kts.

Armament: 12 6" in triple turrets; 8 4" AA in twin gunhouses; numerous smaller AA. 6 21" TT in triple mounts. Armor unreported. Planes: 4. Catapults: 1.

There have been reports that the *Newfoundland* and *Bermuda* have been built as 10,000-tonners, also that there are to be two further vessels in this group (which may also prove to be 10,000-tonners). The *Fiji* and *Trinidad*, lost in action, were of the Mauritius type.

7 or more Dido Class

Photo Pages 120, 121

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------|---------------|-----------|----------|-------|
| PHOEBE | Fairfield | 9/ 2/37 | 3/25/39 | 1940 |
| EURYALUS | Chatham | 10/21/37 | 6/ 6/39 | 1940 |
| DIDO | Cammell Laird | 10/20/37 | 7/18/39 | 1940 |
| SIRIUS | Portsmouth | 4/ 6/38 | 1940 | 1941 |
| CLEOPATRA | Hawthorn | 1/ 5/39 | 1940 | 1941 |
| SCYLLA | Scotts | 4/19/39 | 1940 | 1941 |
| ARGONAUT | Cammell Laird | 1940 | 1941 | 1942 |

Standard Displacement: 5,450 tons.

Dimensions: 506' x 51' 6" x 14'.

Propulsion: Four screws, four sets geared turbines, 62,000 SHP. Speed: 33 kts.

Armament: 10 5.25" DP in twin turrets; numerous smaller AA. 6 21" TT in triple mounts. Armor: 2" belt; 1" turrets. No planes or catapults.

The Didos are among Britain's most successful men-of-war. Designed as anti-aircraft cruisers in anticipation of the need for escort vessels, they are capable of putting up a formidable volume of flak. The *Scylla* has a long and distinguished record on the difficult Murmansk convoy route. The *Dido*, struck by a 2,000-pound bomb during the Battle of Crete in 1941, was repaired in the United States. Didos inspired the U. S. *Atlantis*, which are, however, more modern in design, a little larger and more heavily armed (16 5" DP). The Didos' weakest point is the fact that their powerplants operate on 350-pound-per-square-inch steam, considerably below contemporary U. S. practice. Vessels of this class reported lost are the *Bonaventure*, *Naiad* and *Hermione*.

1 Belfast Class

Photo Page 121

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|-----------------|-----------|----------|-------|
| BELFAST | Harland & Wolff | 12/10/36 | 3/17/38 | 1939 |

Standard Displacement: 10,000 tons. Dimensions: 613' 6" x 63' 4" x 17' 3".

Propulsion: Four screws, four sets geared turbines, 80,000 SHP. Speed: 32.5 kts.

Armament: 12 6" in triple turrets; 12 4" AA in twin gunhouses; numerous smaller AA. 6 21" TT in triple mounts. Armor: 3"-4.5" belt; 2" turrets. Planes: 4. Catapults: 1.

The *Belfast* is the survivor of a class of two (similar to the Newcastle class), the *Edinburgh* having been lost in 1942. The *Belfast* herself was torpedoed inside the Firth of Forth near the city of Edinburgh late in 1939. She has since been repaired.

5 Newcastle Class

Photo Pages 121, 122

| Name | Builder | Keel Laid | Launched | Comp. |
|------------|---------------|-----------|----------|----------|
| NEWCASTLE | Vickers, Tyne | 10/ 4/34 | 1/23/36 | 3/ 5/37 |
| GLASGOW | Scotts | 4/16/35 | 6/20/36 | 9/ 8/37 |
| SHEFFIELD | Vickers, Tyne | 1/31/35 | 7/23/36 | 8/25/37 |
| BIRMINGHAM | Devonport | 7/18/35 | 9/ 1/36 | 11/18/37 |
| LIVERPOOL | Fairfield | 2/17/36 | 3/24/37 | 10/25/38 |

Standard Displacement: 9,400 tons (*Liverpool*), 9,100 tons (others). Dimensions: 591' 6" x 64' 2" x 17'.

Propulsion: Four screws, four sets geared turbines, 75,000 SHP. Speed: 32 kts.

Armament: 12 6" in triple turrets; 8 4" AA in twin gunhouses (possibly since increased); numerous smaller AA. 6 21" TT in triple mounts. Armor: 3"-4" belt; 1"-2" turrets. Planes: 3. Catapults: 1.

Three Newcastles, the *Southampton* (with the *Illustrious* when she was bombed so heavily in the Mediterranean), *Gloucester* and *Manchester*, have been lost.

3 Arethusa Class

Photo Pages 121, 122

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|-----------------|-----------|----------|-------|
| ARETHUSA | Chatham | 1/25/33 | 3/ 6/34 | 2/35 |
| PENELOPE | Harland & Wolff | 5/30/34 | 10/15/35 | 11/36 |
| AURORA | Portsmouth | 7/23/35 | 8/20/36 | 11 37 |

Standard Displacement: 5,220 tons (*Arethusa*), 5,270 tons (others). Dimensions: 500' w.l. x 51' x 13' 10".

Propulsion: Four screws, four sets geared turbines, 64,000 SHP. Speed: 32.25 kts.

Armament: 6 6"/50 in twin turrets; 8 4" AA in twin gunhouses; numerous smaller AA. 6 21" TT in triple mounts. Armor: 2" side; 1" turrets. Planes: 1. Catapults: 1.

The *Aurora* has had her plane and catapult only since the war. The *Arethusa* class are considered by the British the smallest size of cruiser compatible with seagoing efficiency and ability to deal with enemy surface raiders such as armed merchant cruisers. The *Galatea* of this class has been lost in action.

2 Orion Class

Photo Page 123

| Name | Builder | Keel Laid | Launched | Comp. |
|-------|-------------------|-----------|----------|---------|
| ORION | Devonport | 9/26/31 | 11/24/32 | 1/16/34 |
| AJAX | Vickers-Armstrong | 2/ 7/33 | 3/ 1/34 | 6/ 3/35 |

Standard Displacement: 7,215 tons (*Orion*), 6,985 (*Ajax*). Dimensions: *Orion*, 554' 6" x 55' 2" x 16'; *Ajax*, 546' 6" x 55' 8" x 15' 6".

Propulsion: Four screws, four sets geared turbines, 72,000 SHP. Speed: 32.5 kts.

Armament: 8 6"/50 in twin turrets; 8 4" AA; numerous smaller AA. 8 21" TT in quadruple mounts. Armor: 2"-4" belt; 2" deck. Planes: 2. Catapults: 1.

The *Leander* and *Achilles* of this type have been loaned to New Zealand and so are listed under the New Zealand navy. The *Ajax* is one of the famous trio that brought the *Graf Spee* to bay in 1939. *Neptune*, a sister of *Ajax* and *Orion*, was lost in 1941.

2 Enterprise Class

| Name | Builder | Keel Laid | Launched | Comp. |
|------------|-----------|-----------|----------|---------|
| ENTERPRISE | Clydebank | 6/28/18 | 12/23/19 | 1/26 |
| EMERALD | Armstrong | 9/23/18 | 5/1920 | 1/14/26 |

Standard Displacement: 7,580 tons (*Enterprise*), 7,550 (*Emerald*). Dimensions: 570' x 54' 6" x 16' 6".

Propulsion: Four screws, four sets geared turbines, 80,000 SHP. Speed: 32 kts.

Armament: 7 6"/50; 5 4" AA in pairs (possibly since increased); numerous smaller AA. 16 21" TT in quadruple mounts. Armor: 1.5"-3" belt; 1" deck. Planes: 1. Catapults: 1.

The *Emerald* and *Enterprise*, are among the last British ships arising out of a World War I construction program. Order for a third sister, the *Euphrates*, was cancelled.

6 Dauntless Class

Photo Page 126

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------|-----------|-----------|----------|---------|
| DANAE | Armstrong | 12/16 | 1/26/18 | 7/18 |
| DAUNTLESS | Palmer | 1/17 | 4/10/18 | 12/18 |
| DELHI | Armstrong | 10/29/17 | 8/23/18 | 6/19 |
| DIOMEDE | Vickers | 6/18 | 4/29/19 | 4/24/22 |
| DURBAN | Scotts | 1/18 | 5/29/19 | 9/ 1/21 |
| DESPATCH | Fairfield | 7/18 | 9/24/19 | 6/ 2/22 |

Standard Displacement: 4,850 tons. Dimensions: 472' 6" x 46' 6" x 14' 3".
 Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 29 kts.
 Armament: 6 6"/50 in single mounts; 3 4" AA (possibly since increased); several smaller AA. 12 21" TT in triple mounts. Armor: 1.5"-3" belt; 1" deck. Planes: 0. Catapults: 0.

The Dauntless' are six survivors of a projected class of 12 "emergency cruisers" designed during the last war. Four—*Daedalus*, *Daring*, *Desperate* and *Dryad*—were cancelled after the armistice. A fifth, the *Dunedin*, was torpedoed and sunk in the North Atlantic in 1941, and a sixth, the *Dragon*, was transferred to the Polish Navy in January, 1943. The Dauntless' are "lengthened Ceres'" (to make room for an extra 6" gun).

4 Ceres Class

Photo Page 127

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------------------------|---------------|-----------|----------|-------|
| CERES | Clydebank | 4/26/16 | 3/24/17 | 6/17 |
| CARDIFF (ex- <i>Caprice</i>) | Fairfield | 7/16 | 4/12/17 | 7/17 |
| COLOMBO | Fairfield | 12/17 | 12/18/18 | 6/19 |
| CAPETOWN | Cammell Laird | 2/23/18 | 6/28/19 | 2/22 |

Standard Displacement: 4,290 tons. Dimensions: 450' x 43' 6" x 14' 1".
 Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 29 kts.

Armament: Possibly all 4", and 8ofors and pompom AC AA, as two of these vessels (*Copetown*, *Colombo*) were to have been converted to anti-aircraft cruisers, and the other two may have been also. Original armament: 5 5"/50; 2 3" AA; several smaller; 8 21" TT in pairs. Armor: 1.5"-3" belt; 1" deck. Planes: 0. Catapults: 0.

Shortly after the outbreak of the war, Great Britain hit upon the expedient of rearming a number of old cruisers (from among the Ceres and other classes listed below) as anti-aircraft vessels. Precisely which ships have been so rearmed is not known in many cases. The anti-aircraft cruisers have been quite successful. In basic design, the Ceres, Caledon and Carlisle classes are similar.

2 Caledon Class

Photo Page 127

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|---------------|-----------|----------|-------|
| CALEDON | Cammell Laird | 3/17/16 | 11/25/16 | 3/17 |
| CARADOC | Scotts | 2/16 | 12/23/16 | 6/17 |

Standard Displacement: 4,180 tons. Dimensions: 450' x 42' 9" x 14' 1".
 Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 29 kts.

Armament: Probably 8 4" AA and several 8ofors 40 mm and pompom AC AA; originally, 5 6"/50 in single mounts; 2 3" AA, and several smaller AA; 8 21" TT in pairs. Armor: 1.25"-3" side; 1" deck. Planes: 0. Catapults: 0.

The *Caledon* was announced as scheduled for rearmament in 1939 as an AA cruiser; the *Caradoc* probably was also rearmed. A sister, *Calypso*, was sunk by an Italian submarine torpedo in 1940.

1 Carlisle Class

Photo Page 127

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|-----------|-----------|----------|-------|
| CARLISLE | Fairfield | 10/17 | 7/ 9/18 | 2/19 |

Standard Displacement: 4,200 tons. Dimensions: 450' x 43' 6" x 14' 1".
 Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 29 kts.

Armament: 8 4" AA in twin gunhouses; several smaller AA, including pompoms. Armor: 1.5"-3" side; 1" deck. Planes: 0. Catapults: 0.

The *Carlisle* is the last of four Carlisle-class sisters. *Cairo* and *Calcutta* were sunk in 1942 and 1941 respectively. *Curacao* has been stricken from the British Navy list, reason unstated. The AA armament listed above has probably been modified, especially since mass production has been attained in the U. S. and Britain on 8ofors and Oerlikon guns. The *Carlisle's* AA functions date from 1939, when she was converted from a type similar to the *Caledon* and *Ceres*.

GREAT BRITAIN - DESTROYERS

Since 1940, British destroyer yards have concentrated mainly on two broad types of vessels (within each of which many variations exist). One is the Javelin design, and an enlarged version, the Laforey. A number of Javelins and one Laforey have been turned out for British dominion navies as well as for the navies of the various governments-in-exile, in the latter case, mainly to replace losses of the exiled governments' own craft. (Such vessels will be found under the respective dominions and countries). Another type is the Hunt, equivalent to the U. S. destroyer escort and accordingly listed among British anti-submarine craft. A great many more ships of both types than listed have been completed, of course, but their names have not been announced. With few exceptions (such as the Caesar class), however, the war emergency classes listed here appear to be complete, as they all originally numbered eight ships each, the number usually ordered at one time by the British Admiralty.

5 or more Caesar Class

CAESAR, CHEQUERS, CHEVIOT, COCKADE, CORYSFORT. All reported as entering service 1942-3. No particulars or photos available.

1 or more Virago Class

VIRAGO (1942-3) and probably seven others. Probably of Javelin or Laforey type.

The official account of the sinking of the *Scharnhorst* mentioned a British destroyer by the name of *Virago*. She is probably a ship of a new V series. Although no names have been reported, it is possible that W, A and B groups of Javelin or Laforey type have also been built.

3 or more Tumult Class

TEASER, TUMULT, TYRIAN (all 1942-3). No particulars available. Are presumably modified Javelins and have five T class sisters.

4 or more Saumarez Class

SAUMAREZ, SAVAGE, SCORPION, SPRAYGIRT and possibly four or five others, all launched 1942-3. No details available, but are probably modified Javelins or Laforeys.

The existence of an S group of modified Javelins or Laforeys was dramatically revealed by the sinking of the *Scharnhorst*, in which three of the destroyers named above, with *Stord*, a Norwegian destroyer, executed a close torpedo attack on the slightly wounded *Scharnhorst* to slow her down so that the *Duke of York* and accompanying British cruisers could bring her to final action. *Stord*, not on the Norwegian navy's pre-war list, is very likely an S-class vessel turned over to the Norwegian government-in-exile by Britain. *Spraygirt* was named as among the Allied vessels participating in the landing below Rome.

8 Rotherham Class

Photo Page 131

RACEHORSE, RAIDER, RAPID, REDOUBT, RELENTLESS, ROCKET, ROEBUCK, ROTHERHAM. All launched 1941-2. No specifications released, but appear to be one of the modified Javelin classes.

7 Queenborough Class

QUADRANT, QUAIL, QUALITY, QUEENBOROUGH, QUIBERON, QUICKMATCH, QUILLIAM. All launched in 1941-2. No specifications; another probable modified Javelin class.

Quentin of Queenborough type was sunk by German bombs, Dec. 2, 1942.

5 Paladin Class

PALADIN, PATHFINDER, PENN, PETARD, PORCUPINE. All launched 1941-2; another group of the basic Javelin design.

Pakenham, original nameship of the Paladin class, lost, May, 1943; *Partridge* lost January, 1943; *Panther*, October, 1943.

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8 Onslow Class

OBDURATE, OBEDIENT, OFFA, ONSLAUGHT, ONSLOW, OPPORTUNE, ORIBI, ORWELL. All launched 1940-41. No specifications available; also appear to be a modified Javelin group.

2 Inconstant Class

INCONSTANT, ITHURIEL. Launched 1940 or 1941. Specifications same as *Icarus* class, of which the *Inconstant* and *Ithuriel* are war emergency copies.

3 Highlander Class

HIGHLANDER (ex-*Jaguaribe*, 1939), HAVELOCK (ex-*Jutahy*, 1940?), HESPERUS (ex-*Hearty*, ex-*Juruena*, 1940?). Specifications similar to Hero and Gallant type.

The *Hesperus* and her two sisters are the surviving three of six destroyers of the Hero and Gallant type under construction in British yards for Brazil at the start of the war and purchased by the Royal Navy. The names beginning with *J* are the former Brazilian designations for the ships. The three ships of this class that have been lost are the *Havant* (Brazilian name unreported), *Harvester* (ex-*Handy*, ex-*Jurua*) and *Hurricane* (ex-*Japarua*), lost in 1940, 1943 and 1944 respectively.

1 Nepal Class

NEPAL (ex-*Norseman*, 1940). Specifications identical with Javelin class.

The *Nepal* is the only one of eight N series Javelins still in the Royal Navy, to which it was returned in 1942 after a period under the Australian flag. The *Nestor* has been lost; the *Noble* and *Nonpareil* are now the *Jan van Galen* and *Tjerk Hiddes* of the Netherlands navy; the *Nerissa* was transferred to Poland and is now the *Piorun*; and *Napier*, *Nizam* and *Norman* are still in the Australian fleet.

6 Mahratta Class

MAHRATTA (ex-*Marksman*), MARNE, MATCHLESS, METEOR, MILNE, MUSKETEER (all 1940). Specifications identical with Laforeys.

The Mahrattas are repeat Laforeys, ordered a year later. *Myrmidon*, a Mahratta, was transferred to Poland in 1941, renamed *Orkan*, and lost in 1943. The *Martin*, another Mahratta, was lost at Oran during the Allied landing in 1942. The *Milne* is equipped as a destroyer leader.

5 Laforey Class

LAFOREY, LANCE, LEGION, LOOKOUT, LOYAL (all 1939). Standard Displacement: 1,920 tons. Dimensions: 354' x 37' x 10'. Propulsion: Two screws, two sets geared turbines, 48,000 SHP. Speed: 36.5 kts. Armament: 6 4.7" in twin gunhouses; 1 4" AA; several smaller AA (probably now includes Bofors 40 mm AC); 4 21" TT in quadruple mount; DCTs.

The Laforeys, better known as Lightnings, after a nameship which has been lost, are enlarged Javelins with reduced torpedo armament. (Laforey torpedo armament, however, at first eight tubes). Besides the *Lightning*, sunk March, 1942, "L" class ships lost are the, *Gurkha* (second ship of name, ex-*Larne*) sent to the bottom in February, 1942, and the *Lively*, lost through enemy air action in eastern Mediterranean, May, 1942.

4 Kelvin Class

KELVIN, KHARTOUM, KIMBERLEY, KINGSTON (all 1939). Specifications identical with Javelins.

Photo Page 128

The Kelvins are four of eight repeat Javelins ordered a year after the Javelins. The four others in the group, all lost, were *Kashmir*, *Kandahar*, *Kelly* and *Kipling*.

3 Javelin Class

Photo Page 128

JANUS, JAVELIN (ex-*Kashmir*), JERVIS (all 1938). Standard Displacement: 1,695 tons (*Jervis*), 1,690 (others). Dimensions: 348' x 35' x 9'. Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 36 kts. Armament: 6 4.7" twinned behind large shields; 1 4" AA; 6 smaller AA (possibly increased since war and may now include Bofors 40 mm AC); S 21" TT in quintuple mount; DCTs.

The Javelins are one of the basic types of present day British destroyers. Their original armament included 10 21" TT, but in keeping with present British practice, the after quintuple was removed in favor of a heavy AA gun. Five Javelins have been lost: *Jackal*, *Jaguar*, *Jersey*, *Juno* and *Jupiter*. *Jervis* is fitted as a flotilla leader.

6 Tribal Class

Photo Page 130

ASHANTI, ESKIMO, MAORI, NUBIAN, PUNJABI, TARTAR (all 1937). Standard Displacement: 1,870 tons. Dimensions: 355' 6" x 36' 6" x 9'. Propulsion: Two screws, two sets geared turbines, 44,000 SHP. Speed: 36.5 kts. Armament: 6 4.7" twinned behind large shields; 2 4" AA twinned, also behind large shields; 7 smaller AA (possibly now includes Bofors 40 mm AC); 4 21" TT in quadruple mount; DCTs.

British Tribals are comparable to the U. S. Porter and Somers classes, although the latter are destroyer leaders and only the *Tartar* of the surviving Tribals is so equipped. The Tribals have been in heavy action throughout the war and ten have been lost, as follows: *Afridi*, *Bedouin*, *Cossack* (led rescue of British prisoners from Altmarek, also torpedo attack on *Bismarck*), *Gurkha* (first vessel of name), *Mashona*, *Matabele*, *Mohawk*, *Sikh*, *Somali*, and *Zulu*. Eight destroyers of the same design are under construction in Australia, and six in Canada.

4 Icarus Class

Photo Page 128

ICARUS (1936), ISIS (1936), ILEX (1937), IMPULSIVE (1937). Standard Displacement: 1,370 tons. Dimensions: 320' w.l. x 33' x 8' 6". Propulsion: Two screws, two sets geared turbines, 34,000 SHP. Speed: 36 kts. Armament: 4 single 4.7" behind small shields; several smaller, AA (possibly now includes Bofors 40 mm AC); S 21" TT in quintuple mount; DCTs; fitted as minelayers.

Imogen, *Imperial*, *Intrepid* and *Ivanhoe* of this type have been lost. The Icaruses once had ten 21" torpedo tubes but, like so many other destroyers, not only British but of other belligerent nationalities as well, they lost five in favor of additional AA. Few British destroyers in service today have more than five torpedo tubes, and many have only four.

1 Inglefield Class

Photo Page 132

INGLEFIELD (1936). Standard Displacement: 1,530 tons. Dimensions: 334' w.l. x 34' x 9'. Propulsion: Two screws, two sets geared turbines, 38,000 SHP. Speed: 36.5 kts. Armament: 5 single 4.7" behind shields; 6 smaller, AA (possibly increased since war); S 21" TT in quintuple mount; DCTs.

The *Inglefield* is one of a number of different British destroyer leaders built during the early and middle 'thirties paralleling the alphabetical progression of British destroyers, i.e., the *Inglefield* was built at the same time as the Icaruses; the *Grenville* (lost in 1940), simultaneously with the Gallants, etc. Special destroyer leaders were dropped as unnecessary with the growth of destroyers around 1937 (from the Tribal class forward) large enough to carry the flotilla commander and his staff. (Similarly, the U. S. has built no leaders since the laying down of the Ellysons and Fletchers). The *Inglefield* originally had 10 torpedo tubes.

2 Hero Class

HERO, HOTSPUR (both 1936). Specifications identical with Gallant class, except displacement, 1,340 tons.

The *Hero* and *Hotspur* are the remaining pair of a group of eight. The others, all lost, were *Hasty*, *Havock*, *Hereward*, *Hostile*, *Hunter* and *Hyperion*. *Hardy*, 1,540-ton destroyer leader built simultaneously with *Heroes*, has also been lost.

2 Gallant Class

GALLANT, GRIFFIN (both 1935). Standard Displacement: 1,335 tons. Dimensions: 323' x 33' x 8' 6". Propulsion: Two screws, two sets geared turbines, 34,000 SHP. Speed: 36 kts. Armament: 4 single 4.7" behind large shields; 1 4" AA; 6 smaller AA (possibly now includes Bofors 40 mm AC); 4 21" TT in quadruple mount; DCTs.

The *Gallant* and *Griffin* originally mounted eight torpedo tubes and a three-inch AA. The latter and four after tubes have been removed in favor of a 4" AA. Five Gallants have been lost: *Gipsy*, *Glowworm*, *Grafton*, *Grenade* and *Greyhound* (the vessel that spotted the Italians to open the Battle of Cape Matapan). Another, *Garland*, was transferred to Poland in 1939, name apparently remaining unchanged. *Grenville*, leader built alongside the Gallants, was sunk in 1940.

5 Fame Class

Photo Page 132

FAME, FORESTER, FORTUNE, FOXHOUND, FURY (all 1934). Specifications identical with Echo class, except displacement, 1,350 tons.

The Fames are repeat Echoes, ordered a year later. *Fearless*, *Firedrake* and *Foresight* of Fame group lost.

1 Faulknor Class

Photo Page 132

FAULKNOR (1934). Standard Displacement: 1,460 tons. Dimensions: 340' w.l. x 33' 9" x 8' 7". Propulsion: Two screws, two geared turbines, 38,000 SHP. Speed: 36.75 kts. Armament: 5 single 4.7" behind small shields; 1 4" AA; several smaller AA (possibly now including Bofors 40 mm AC); 4 21" TT in quadruple mount; DCTs.

The *Faulknor*, leader paralleling the Fame class of destroyers, originally had eight torpedo tubes; the after four were dropped in favor of AA gun.

3 Echo Class

ECLIPSE, ESCAPE, EXPRESS (all 1934). Standard Displacement: 1,375 tons. Dimensions: 329' x 33' 3" x 8' 6". Propulsion: Two screws, two sets geared turbines, 36,000 SHP. Speed: 36 kts. Armament: 4 single 4.7" behind shields; 1 3" AA; 6 smaller AA (may now include Bofors 40 mm AC); 4 21" TT in quadruple mount; 2 DCT.

The *Express* is fitted for minelaying and, when carrying out mine duties, two of her 4.7" guns are generally removed. *Eclipse*, *Electra*, *Encounter*, *Escort* and *Esk* of this type have been lost, as also the *Exmouth*, the "E" leader built at the same time as the Eclipses.

1 Decoy Class

DECOY (1932). Standard Displacement: 1,375 tons. Dimensions: 326' w.l. x 35' x 8' 6". Other particulars as Echo class above.

Although its particulars are almost identical with the Echoes, the *Decoy* resembles an earlier type of British destroyer, the *Active*, more closely in layout. The *Decoy* is the only one of a group of eight "Ds" surviving. The others, all war casualties, were: *Dainty*, *Daring*, *Defender*, *Delight*, *Diamond*, *Duchess* and *Margaree* (ex-*Diana*, operated by Canadian Navy). Four C-class vessels, similar to the *Decoy-Active* type, were transferred to Canada in 1939; two of these have also been sunk.

1 Duncan Class

Photo Page 132

DUNCAN (1932). Standard Displacement: 1,400 tons. Dimensions: 326' w.l. x 33' x 8' 8". Propulsion: Two screws, two sets geared turbines, 36,000 SHP. Speed: 35.75 kts. Armament: 4 single 4.7" behind shields; several smaller, AA (possibly now includes Bofors 40 mm AC); 4 21" TT in quadruple mount; DCTs.

The *Duncan* is the "D" leader. Unlike other British leaders of the period, it resembles its alphabetical mate closely in external appearance and general arrangements. The *Duncan* is one of the smallest of modern British leaders.

5 Beagle Class

Photo Page 133

BEAGLE, BOADICEA, BOREAS, BRILLIANT, BULLDOG (all 1930). Specifications identical with *Active* class, except displacement, 1,360 tons.

Three B's have been lost—*Basilisk*, *Blanche* and *Brazen*. The Beagles are repeat *Actives*, ordered a year later.

4 Active Class

Photo Page 132

ACTIVE, ANTELOPE, ANTHONY, ARROW (all 1929). Standard Displacement: 1,350 tons. Dimensions: 323' x 32' 3" x 8' 6". Propulsion: Two screws, two sets geared turbines, 34,000 SHP. Speed: 35 kts. Armament: 4 single 4.7" behind shields; six smaller, AA (possibly now includes Bofors 40 mm AC); 4 21" TT in quadruple mount; DCTs.

Acasta, *Achates*, *Acheron* and *Ardent* of the *Active* type have been lost. The *Saguenay* and *Skeena*, built specially for the Canadian Navy, are *Actives* with heavy bows for icebreaking.

1 Codrington Class

Photo Page 133

CODRINGTON (1929). Standard Displacement: 1,540 tons. Dimensions: 332' x 33' 9" x 9'. Propulsion: Two screws, two sets geared turbines, 39,000 SHP. Speed: 35 kts. Armament: 5 single 4.7" behind shields; several smaller, AA (possibly includes Bofors 40 mm AC now); 8 21" TT in quadruple mounts (four tubes may have been removed to make room for more AA); DCTs.

The *Codrington* is the "C" leader, built under the same program as the four C-class vessels transferred to Canada.

1 Amazon Class

Photo Page 133

AMAZON (1926). Standard Displacement: 1,350 tons. Dimensions: 311' 9" pp. x 31' 6" x 9' 2". Propulsion: Two screws, two sets geared turbines, 39,500 SHP. Speed: 37 kts. Armament similar to *Ambuscade*.

The *Amazon* is a flotilla leader.

1 Ambuscade Class

AMBUSCADE (1926). Standard Displacement: 1,170 tons. Dimensions: 307' pp. x 31' x 8' 3". Propulsion: Two screws, two sets geared turbines, 33,000 SHP. Speed: 37 kts. Armament: 4 single 4.7" behind shields; 1 3" AA; 6 smaller AA (may now include Bofors 40 mm AC); 3 21" TT in triple mount; DCTs.

The *Ambuscade* is a flotilla leader.

1 Keppel Class

KEPPEL (1920). Standard Displacement: 1,480 tons. Dimensions: 329' x 31' 9" x 12' 6". Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 31 kts. Armament: 4 single 4.7"; 1 3" AA; several smaller; 6 21" TT in triple mounts (three tubes possibly removed); DCTs.

One sister of the *Keppel*, the *Broke*, was lost in 1942, and another, the *Wallace*, has been rearmed for escort duties (it is listed under anti-submarine craft). Hence the *Keppel*, originally a flotilla leader generally similar to the *Campbells*, may also have been rearmed and reclassified. Two sisters, the *Shakespeare* and *Spenser*, were scrapped before the war.

11 Modified Admiralty "W" Class

Photo Page 133

VENOMOUS (1918), VANSITTART, VERITY, VOLUNTEER, WANDERER, WHITEHALL, WHITSHEAD, WITHERINGTON, WIVERN, WOLVERINE, WORCESTER (all 1919). Standard Displacement: 1,120 tons. Dimensions: 312' x 29' 6" x 10' 10". Propulsion: Two screws, two sets geared turbines, 27,000 SHP. Speed: 31 kts. Armament: 3 single 4.7" behind small shields; 1 3" AA; 2 2-pounders; several machine guns (possibly modified since war); 3 21" TT in triple mounts; DCTs.

The Modified Admiralty W's are the last large group of destroyers coming under Britain's emergency program in the last year. Ships of this general type have been rearmed for escort duties in some instances. Those listed here as destroyers are either still armed as fleet units or, if altered, no announcement has been made. This particular group differs from the Admiralty W and V type below principally in armament. *Veteran*, *Wild Swan* and *Wren*, among Britain's ship casualties in this war, are of the modified W group.

2 Thornycroft Modified "W" Class

Photo Page 134

WISHART, WITCH (both 1918). Standard Displacement: 1,140 tons. Dimensions: 312' x 30' 7" x 10' 11". Propulsion: Two screws, two sets geared turbines, 30,000 SHP. Speed: 32 kts. Armament: 4 single 4.7" behind small shields; 2 2-pounder; additional smaller (AA probably mounted today); 3 21" TT in triple mount; DCTs.

The *Wishart* and *Witch* resemble the Admiralty modified Ws closely except in horsepower, speed and some details of armament.

5 Campbell Class

Photo Page 134

CAMPBELL, DOUGLAS, MACKAY (ex-*Claverhouse*), MONTROSE (all 1918); MALCOLM (1919). Standard Displacement: 1,530 tons. Dimensions: 332' 6" x 31' 9" x 9' 3". Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 31 kts. Armament: 5 single 4.7", forward two behind shields; 1 3" AA; several smaller; 3 21" TT in triple mount; DCTs.

The Campbells were built as leaders, but some or all may have been rearmed as escort vessels. A sister ship, *Stuart*, is in the Canadian navy; another, *Bruce*, was scrapped before the war, and the *Scott* was lost in 1918.

17 Admiralty "W" and "V" Class

Photo Page 134

VANOC, VANQUISHER, VELOX, VERDUN, VERSATILE, VESPER, VIMY, VIVACIOUS, WALKER, WARWICK, WATCHMAN, WINCHELSEA (all 1917); VANITY, VIDETTE, WALPOLE, WESTCOTT (all 1918). Standard Displacement: 1,100 tons. Dimensions: 312' x 29' 6" x 10' 10". Propulsion: Two screws, two sets geared turbines, 27,000 SHP. Speed: 31 kts. Armament: 4 single 4"; several smaller; 3 21" TT in triple mount; DCTs; *Velox*, *Versatile*, *Vimy*, *Walker*, *Warwick*, *Watchman* fitted as minelayers.

Venetia, *Vortigern*, *Waterhen*, *Wessex* and *Whirlwind* of this type have been lost, as has also Australia's *Vampire*, another Admiralty V. Two more Admiralty V's are *Voyager* and *Vendetta*, transferred to the Australian navy in 1932. Some of these may have been rearmed as escort craft.

2 Thornycroft "V" Class

VICEROY, VISCOUNT (both 1917). Standard Displacement: 1,120 tons. Dimensions: 312' x 30' 6" x 7' 9". Propulsion: Two screws, two sets geared turbines, 30,000 SHP. Speed: 31 kts. Armament: 4 single 4"; several smaller; 3 21" TT in triple mount; DCTs.

7 Admiralty "S" Class

Photo Page 135

SABRE, SCIMITAR, SCOUT, TENEDOS (all 1918), SALADIN, SARDONYX, SHUKARI (all 1919). Standard Displacement: 905 tons. Dimensions: 276' x 26' 9" x 10' 10". Propulsion: Two screws, two sets geared turbines, 27,000 SHP. Speed: 31 kts. Armament: 3 single 4"; several smaller; 4 21" TT in pairs; DCTs; nearly all fitted as minelayers.

The main armament of the Admiralty S ships can be elevated only to 30 degrees; hence they may have been rearmed with high-angle guns for AA protection. Most are now used as minelayers. Four of this class, *Stronghold*, *Sturdy*, *Thanet* and *Throcian*, have been lost.

1 Admiralty "R" Class

Photo Page 135

SKATE (1917). Standard Displacement: 900 tons. Dimensions: 276' x 26' 9" x 10' 6". Propulsion: Two screws, two sets geared turbines, 27,000 SHP. Speed: 31 kts. Armament (as of 1939; may have been rearmed): 3 single 4"; 1 2-pounder; several smaller; 4 21" TT in pairs; DCTs.

The *Skate* is the sole survivor of a once numerous class; the others have long since been scrapped.

Note: The following four classes are flush-deck destroyers obtained from the United States by the historic bases-for-ships trade of September, 1940. Thirty-seven vessels are listed here. Six more have been lost. The other seven (of which one has been lost) were turned over to the Canadian Navy. Transferred flush-deckers have been renamed for towns common to Britain or Canada and the United States.

14 Burnham Class

BRADFORD (ex-*McLanahan*, 1918), BROADWAY (ex-*Hunt*, 1920), BURNHAM (ex-*Aulick*, 1919), BURWELL (ex-*Laub*, 1918), BUXTON (ex-*Edwards*, 1918), CAMERON (ex-*Welles*, 1919), CHESTERFIELD (ex-*W. C. Wood*, 1920), CHURCHILL (ex-*Herndon*, 1919), CLARE (ex-*A. P. Upshur*, 1920), RAMSEY (ex-*Meade*, 1919), READING (ex-*Bailey*, 1919), RIPLEY (ex-*Shubrick*, 1918), ROCKINGHAM (ex-*Swasey*, 1919), SHERWOOD (ex-*Rodgers*, ex-*Kalk*, 1919). Standard Displacement: 1,190 tons. Dimensions: 314' 8" x 30' 8" x 9' 3". Propulsion: Two screws, two sets geared turbines, 27,000 SHP. Speed: 35 kts. Armament (at time of transfer): 4 single 4"; some smaller; 12 21" TT; DCTs.

Belmont (ex-*Satterlee*), *Beverly* (ex-*Branch*), *Broadwater* (ex-*Mason*) and *Stanley* (ex-*McCalla*) of 1917-18 type of U. S. flush decker have been lost since their transfer to the British Navy. Armament of all transferred destroyers has probably been modified. Reduction of torpedo tubes to six has been unofficially reported. *St. Francis* (ex-*Bancroft*) and late *St. Croix* (ex-*McCook*) of Canadian Navy are also 1,190-ton ex-U. S. flush deckers. *Churchill* is fitted as a flotilla leader.

11 Montgomery Class

Photo Page 135

CALDWELL (ex-*Hale*, 1919), CASTLETON (ex-*Aaron Ward*, 1919), CHELSEA (ex-*Crowninshield*, 1919), LANCASTER (ex-*Philip*, 1918), LEAMINGTON (ex-*Twiggs*, 1918), LINCOLN (ex-*Yarnall*, 1918), MANSFIELD (ex-*Evans*, 1918), MONTGOMERY (ex-*Wickes*, 1918), RICHMOND (ex-*Fairfax*, 1917), SALISBURY (ex-*Claxton*, 1919), WELLS (ex-*Tillman*, 1919). Standard Displacement: 1,090 tons. Dimensions: 314' 4" x 30' 6" x 8' 8". Propulsion: Two screws, two sets geared turbines, 24,200 SHP. Speed: 35 kts. Armament (at time of delivery): 4 single 4"; several smaller; 12 21" TT in triple mounts; DCTs.

Campbeltown (ex-*Buchanan*) of this type was expended in the British commando raid on St. Nazaire in 1942. She was rammed into the lock gates loaded with explosives, destroying the gates in her own explosion. The Montgomerys' torpedo armament has been reduced since transfer to Britain. *Lincoln* manned by Norwegian navy.

9 Newport Class

BRIGHTON (ex-*Cowell*, 1918), CHARLESTOWN (ex-*Abbot*, 1918), GEORGETOWN (ex-*Maddox*, 1918), NEWARK (ex-*Ringgold*, 1918), NEWMARKET (ex-*Robinson*, 1918), NEWPORT (ex-*Sigourney*, 1917), ROXBOROUGH (ex-*Foote*, 1918), ST. ALBANS (ex-*Thomas*, 1918), ST. MARY'S (ex-*Doran*, ex-*Bagley*, 1918). Standard Displacement: 1,060 tons, otherwise identical with Montgomery class.

The *Annapolis* (ex-*Mackenzie*), *Columbia* (ex-*Haroden*), *Hamilton* (ex-*Kalk*, ex-*Rodgers*), *Niagara* (ex-*Thatcher*) and *St. Clair* (ex-*Williams*) of the Canadian navy are also 1,060-ton former American flush-deckers. (*Hamilton*, which has only three funnels, was in British navy from Sept. 1940 to Sept. 1941). *Bath* (ex-*Hopewell*), manned by Norwegian navy, lost in August, 1941, was of this type. Norwegian navy also mans *St. Albans*.

3 Leeds Class

LEEDS (ex-*Conner*, 1917), LUDLOW (ex-*Stockton*, 1917), LEWES (ex-*Conway*, ex-*Craven*, 1918). Standard Displacement: 1,020 tons. Dimensions: 308' w.l. x 30' 8" x 7' 6". Propulsion: Two screws, two sets geared turbines (*Lewes*), three screws, three sets geared turbines (others), 18,000 SHP. Speed: 30 kts. Armament (as of delivery to Britain): 4 single 4"; several smaller; 12 21" TT; DCTs.

These three ships are of the earliest type of flush-decker. The only survivor in the U. S. Navy is the fast transport *Manley*. *Leeds* and *Ludlow* have only three funnels in place of the flush-deckers' customary four.

GREAT BRITAIN - ANTI-SUBMARINE

U.S.-Built Destroyer Escorts

CUBITT, CURZON, DAKINS, FITZROY, HARBROUGH, LOUIS, REYNOLDS, STAYNER, THORNBOROUGH, TORRINGTON, TROLLOP, TYLER (all 1943).

The United States is building an unstated number of U. S. type destroyer escorts for the Royal Navy under lend-lease. Specifications follow DEs for the U. S. Navy, but whether of the slow or fast type is not known. All those above were built at the Bethlehem-Hingham yard in Massachusetts. Other yards, however, may also be building DEs for Britain. DEs are comparable in performance to the Hunt class.

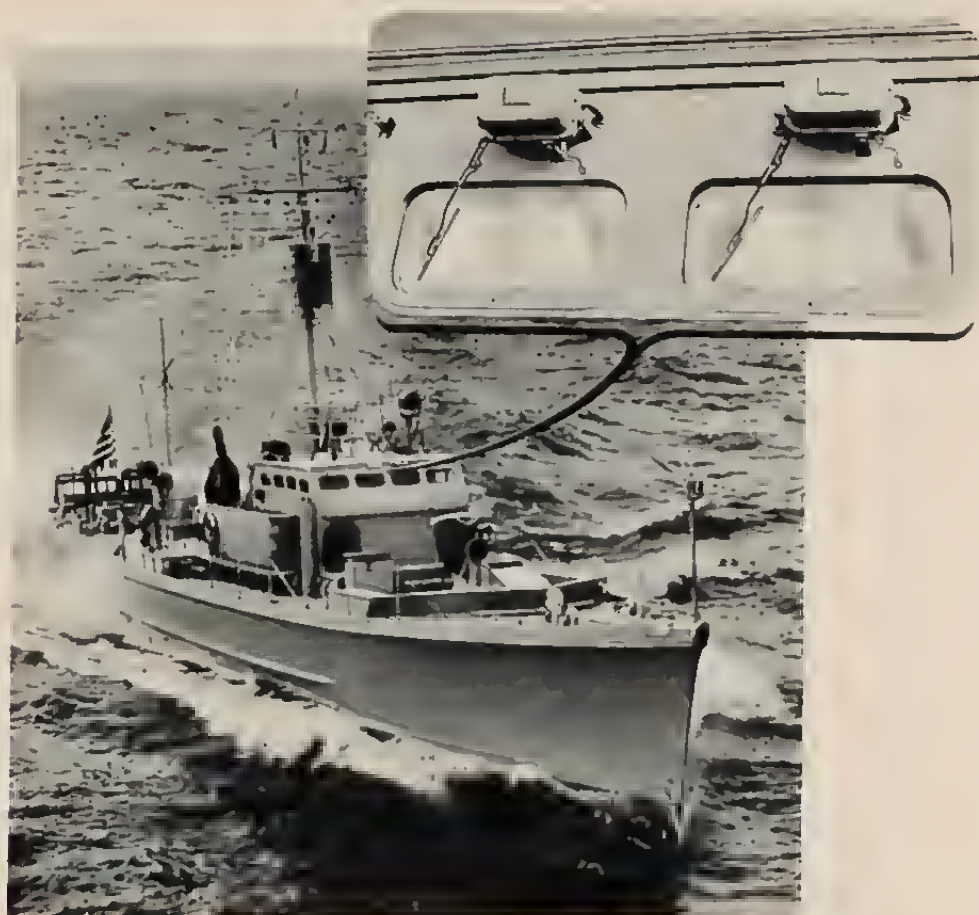
Hunt Class

Photo Page 129

First group: ATHERSTONE, CATTISTOCK, CLEVELAND, COTSWOLD, COTTESMORE, EGLINTON, FERNIE, GARTH, HAMBLEDON, HOLDERNESS, MENDIP, MEYNELL, PYTCHLEY, QUANTOCK, QUORN, SOUTHDOWN, WHADDON (all launched 1940). Standard Displacement: 904 tons. Dimensions: 272' 4" x 28' 3" x 7' 9". Propulsion: Two screws, two sets geared turbines, 19,000 SHP. Speed: 27.5 kts. Armament: 4 4" AA in twin gunhouses; 6 smaller AA, two of which are of fairly large caliber and are in a twin gunhouse immediately forward of after main gunhouse; DCTs.

Later groups: ALBRIGHTON, ALDENHAM, AVON VALE, BADSWORTH, BEAUFORT, BELVOIR, BICESTER, BLACKMORE, BLANKNEY, BLEASDALE, BLENCATHRA, BRAMHAM, BRECON, BRISENDEN, BROCKLESBY, CALPE, CATTERICK, CHIDDINGFOLD, COWDRAY,

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110-Foot Subchaser. Photo courtesy Peterson Boat Works. Sturgeon Bay, Wis.
Inset: Dual installation KEARFOTT-PENDULUM Window Wipers with plain arms.
Photo courtesy Julius Petersen, Nyack, N. Y.



Official U. S.
Navy photo of
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CROOME, DERWENT, EASTON, EGGSFORD, ERIDGE, EXMOOR (second ship of class of name; ex-Burton), FARNDALE, GLAISDALE, GLENDOWER, GOATHLAND, HALCOMBE, HAYDON, HURSLEY, LAMERTON, LAUDERDALE, LEDBURY, LIDDESDALE, MELBREAK, MIDDLETON, OAKLEY (ex-Tickham), ROCKWOOD, STEVENSTONE, TALYBONT, TANAT-SIDE, TETCOTT, THURLOW, WENSLEYDALE, WHEATLAND, WILTON, ZETLAND and others (all 1940-42). Specifications generally similar to first group, but vary in details. Some of later units may be larger.

Hunt class destroyers are a cheap, mass production design for escort duties worked out shortly after the war began. Their names are derived from British hunting clubs. As other escort craft, the Hunts have no torpedo armament, and their engines are of comparatively low power, for a speed of 27 or 28 knots is ample for sub chasing and bomb dodging. The Hunts are approximate equals of the fast type of U. S. DE. They have considerably better performance than frigates.

About a dozen Hunts have been transferred to smaller Allied navies. *Bolebroke*, *Border*, *Hatherleigh* and *Modbury* are now *Pindos*, *Adrias*, *Kanaris* and *Miaoulis* of Greece respectively, and two more unidentified Hunts are to be transferred to Greece under the names of *Nearchos* and *Themistocles*. *Haldon* is now the Fighting French *La Combattante*; two others, original names unreported, were assigned to the Fighting French in 1943, who have named them *L'Assailante* and *La Defendante*. *Krakowiak* of the Polish navy is the ex-*Silverston* and *Slazak* is the ex-*Bedale*. *Glaidsdale*, listed above since it still flies the British flag, is manned by the Royal Norwegian Navy. Sixteen Hunts have been lost, mainly through enemy U-boat torpedoes in the North Atlantic: *Airedale*, *Berkeley*, *Blean*, *Dulvertan*, *Eskdale* (manned by Norwegians), *Exmoor*, *Grove*, *Heythrop*, *Holcombe*, *Hurworth*, *Kujawiak* (ex-Oakley, transferred to Poland), *Limbourn*, *Penylan*, *Puckeridge*, *Southwold*, and *Tynedale*.

1 Wallace Class

WALLACE (191B). Standard Displacement: 1,250 tons. Dimensions: 329' x 31' 9". Present draft unreported. Propulsion: Two screws, two sets geared turbines, 20,000 SHP. Speed: 2B kts. Armament: 4 4" AA in twin gunhouses; several smaller AA; DCTs.

The *Wallace* is a former destroyer leader, a sister of the *Keppel*. She was rearmed for escort duties in 1940-1. Note the changes that make a destroyer an escort: the *Wallace* has been re-engined with lower power turbines, commensurate with her need of only 2B knots' speed as an anti-submarine ship; her torpedo tubes have been removed; and her armament of 4.7" guns has been replaced by 4" AA. These changes lightened her by 230 tons. As a destroyer leader, the *Wallace* drew 12' 6" mean; she probably draws no more than 11' now.

2 Wolsey Class

WOLSEY, WOOLSTON (both 191B). Standard Displacement: 920 tons. Dimensions: 312' x 30' 6". Present draft unreported. Propulsion: Two screws, two sets geared turbines, 18,000 SHP. Speed: 28 kts. Armament: 4 4" AA twinned; several smaller; DCTs.

The *Wolsey* and *Woolston* are rearmed sisters of the Thornycroft V type destroyers *Viceroy* and *Viscount*. As destroyers, these escorts had a displacement of 1,120 tons. Note removal of torpedo armament, reduction of engine power, replacement of 4.7" by 4" AA guns.

8 Valorous Class

Photo Pages 131, 135

VALOROUS, VEGA (both 1917), VANESSA, VIVIEN, WESTMINSTER, WINCHESTER, WOLFHOUD, WRESTLER (all 1918). Standard Displacement: 900 tons. Dimensions: 312' x 29' 6". Present draft unreported. Propulsion: Two screws, two sets geared turbines, 18,000 SHP. Speed: 2B kts. Armament: 4 4" AA in twin gunhouses; several smaller AA; DCTs.

The Valorous class escorts are de-torpedoed, low-powered, AA-armed refits of destroyers of the Admiralty W and V type, their displacement being cut down 200 tons in the process. *Valentine*, *Vimiera*, *Wakeful*, *Whitley* and *Wryneck*, all lost, are of this type of escort.

U.S.-Built Frigates

BENTINCK, BERRY, DRURY, DUCKWORTH and others (all 1942 or later).

ESSINGTON, FOLEY (possibly British-built).

During 1942, it was reported that about two dozen frigates were to be built for Britain in the U. S., mainly at the Mare Island Navy Yard. The only names positively identified so far are *Bentinck* and *Duckworth*. From their names, however, *Berry* and *Drury*, first identified as taking part in a great convoy battle with U-boats in November, 1943, also appear to be American-built frigates.

River Class Frigates

BANN, CAM, DERG, EXE, GLENARM, JED, KALE, LAGAN, LAMBOURN, MOURNE, NEN, NESS, NITH, PLYM, RIBBLE, ROTHER, SPEY, STOUR, SWALE, TAY, TEST, TEVIOT, TRENT, TWEED, WAVENEY, WEAR and others (all 1942-3). Specifications unreported.

Although virtually no details whatever have been given out on "frigates," which are British in design and conception, it is understood that they are essentially somewhat faster, heavier corvettes with twin instead of single screw propulsion. They are said to be about the size of a destroyer (perhaps 300' long). Complement is reported as approximately 125 men. The frigate design, which is being copied in the U. S., evolved from the corvette, the latter not proving heavy enough to cope with heavy North Atlantic weather. Armament apparently consists of 4" AA, smaller AA and depth charges. Through 1943, the only frigate reported lost was the *Itchen*. Frigates are also under construction in Canada. All the frigates in this group are named for English rivers.

Flower Class Corvettes

Photo Page 138

ABELIA, ACANTHUS, ALISMA, AMARANTHUS, ANCHUSA, ANEMONE, ARABIS, ARMERIA, ASPHODEL, ASTER, AUBRIETIA, AZALEA, BALSAM, BEGONIA, BELLWORT, BERGAMOT, BLUEBELL, BORAGE, BRYONY, BURDOCK, BUTTERCUP, CALENDULA, CAMELLIA, CAMPANULA, CAMPION, CANDYTUFT, CELANDINE, CLARKIA, CLEMATIS, CLOVER, COLTSFOOT, COLUMBINE, CONVULVUS, COREOPSIS, COWSLIP, CROCUS, CYCLAMEN, DAHLIA, DELPHINIUM, DIANELLA, DIANTHUS, EGLANTINE, FREESIA, FRITILLARY, GENISTA, GENTIAN, GERANIUM, GLOXINIA, GODETIA, HAREBELL, HEARTS-EASE (ex-Pansy), HEATHER, HEMLOCK, HIBISCUS, HONEYSUCKLE, HYACINTH, HYDRANGEA, IVY, JASMINE, JONQUIL, KINGCUP, LAVENDER, LILY, LING, LOOSESTRIFE, LOTUS (ex-Phlox), MALLOW, MANDRAKE, MARGUERITE, MARJORAM, MEADOWSWEET, MIGNONETTE, MILFOIL, MONKSHOOD, MUSK, MYOSOTIS, NARCISSUS, NASTURTIUM, NIGELLA, ORCHIS, OXLIP, PENNYWORT, PENTSTEMON, PERIWINKLE, PETUNIA, PIMPERNEL, PINK, POPPY, POTENTILLA, PRIMROSE, PRIMULA, RHODODENDRON, ROCKROSE, ROSE, SAXIFRAGE, SNOWDROP, SNOWFLAKE, SPIRAEA, STARWORT, STONECROP, SUNFLOWER, SWEETBRIAR, TULIP, THYME, VERBENA, VERONICA, VERVAIN, VETCH, VIOLET, WALLFLOWER, WOODRUFF.

All launched 1940-43. Specifications of earlier units (later ones may be somewhat enlarged): Standard Displacement, 925 tons. Dimensions: 192' x 32' x 16'. Propulsion: Single screw, reciprocating engines, SHP unreported. Speed: 17 kts. Armament: 1 4" AA, 1 2-pounder pom-pom AA, 1 MG AA, 1 DCT.

The Flower class corvette was evolved in late 1939 by the British Admiralty in response to the need for a cheap anti-submarine vessel. The corvettes' single screw and reciprocating engine is more adaptable to mass production in wartime than a turbine; it has a broader beam and greater draft than the destroyer, resulting in superior seakeeping qualities. However, despite its contributions to Allied victory in the Atlantic, the corvette has not been an unqualified success, and since early 1943 it has been superseded to some extent in British construction programs by the frigate. Of the 111 vessels named above (by no means a complete list; others are still unannounced), four—*Acanthus*, *Eglantine*, *Potentilla* and *Rose*—are manned by the Royal Norwegian Navy, and some may have been loaned or transferred to the Canadian navy. The Belgian section of the British navy mans a corvette which may be one of those above. Britain built two corvettes, *La Dieppoise* and *La Paimpolaise*, now in the hands of the Fighting French, for the French fleet before the collapse of 1940. Eight others, not included above, are also manned by the Fighting French. They are: *Aconit* (ex-Aconite), *Commandant D'Estienne D'Orves* (ex-Lotus), *Commandant Detroyat* (ex-Coriander), *Commandant Drogou* (ex-Chrysanthemum), *La Malouine*, *Lobelia*, *Renoncule* (ex-Renunculus) and *Roselys*. Four corvettes have been transferred to Greece: *Apostolis*, *Kriezis*, *Sachtouris* (ex-Peony) and *Tombazis*. The three whose former names are not stated may come from the 111 identified. Two corvettes were given to Portugal when the Azores were opened to the Allies. *Carnation*, not included above, is now the *Frisio* of the Netherlands government-in-exile fleet. The original corvette program, initiated under 1939 appropriations, called for 56 vessels. Ten more were ordered in Canada. Many more have also been built in Canadian yards, both for the Royal Navy and Canada's own large corvette fleet. (Eight Canadian-built corvettes, begun for the Royal Navy but turned over to Canada before completion, will be found under Canada). Canadian and British builders have also turned out corvettes for the Indian navy (*Hyderabad*, *Oudh*, *Punjab* and others). American newspapers reported without confirmation ten corvettes, perhaps from this list, transferred to the U. S. in 1942. Royal Navy Flower-type corvettes lost up to November, 1943, include: *Arbutus*, *Auricula*, *Erica*, *Fleur de Lys*, *Gardenia*, *Gladiolus*, *Hollyhock*, *Marigold*, *Picotee*, *Polyanthus*, *Salvia*, *Samphire*, *Snapdragon*, *Zinnia*; by the Canadian navy, *Spikenard* and *Windflower* (Canadian-owned vessels lost not listed here); manned by the Fighting French, *Alysse* (ex-Alyssum), *Mimosa*; manned by Norwegians, *Montbretia*.

2 Guillemot Class Corvettes

GUILLEMOT, SHEARWATER (both 1939). Standard Displacement: 580 tons. Other details similar to Kingfisher class.

Like the Kingfisher class, the *Guillemot* and *Shearwater* were originally rated as patrol vessels, their designation being changed after the introduction of the Flower-type corvette. A sister, *Pintail*, was lost in 1941.

6 Kingfisher Class Corvettes

KINGFISHER (1935), KITTIWAKE (1936), MALLARD (1936), PUFFIN (1936), SHELDRAKE (1937), WIDGEON (1938). Standard Displacement: 510 tons (first three), 530 (others). Dimensions: 243' 2" x 26' 6" x 6' 6" (*Widgeon*), 6' (others). Propulsion: Geared turbines, 3,600 SHP. Speed: 20 kts. Armament: 1 4" AA, 8 smaller AA, DCT.

The Kingfishers, originally rated as patrol vessels, but changed in 1939, were designed for coastal convoy work.

1 PC-74 Class Corvette

PC-74 (1918). Standard Displacement: 610 tons. Dimensions: 247' x 26' 9" x 8'. Propulsion: Two screws, two sets geared turbines, 3,500 SHP. Speed: 20 kts. Armament: 1 4"; 24-30 depth charges.

The PC-74 was begun as a patrol vessel during the last war, but was converted to one of the famous "Q" or decoy ships before completion. She is probably the only Q ship of the last war still on an Allied navy list.

1 or more Chanticler Class Sloop

CHANTICLER. A sloop of this name has been reported. No particulars available, may be of Wren type.

6 or more of Unspecified Type

KITE, STARLING, WILD GOOSE, WOODCOCK and possibly others. No data available. May be of more than one type. These four vessels are the stars of a roving anti-submarine "killer group" which was organized under Capt. F. J. Walker, R.N., early in 1943 and which has had extraordinary success by the employment of novel, but undescribed, tactics. For further details see article on Battle of Atlantic.

CRANE, PHEASANT. Identified in Admiralty communique reporting lengthy battle between convoy and German aircraft and U-boats during January, 1944. No particulars available.

4 or more Wren Class Sloops

Photo Page 138

CYGNET, WHIMBREL, WOODPECKER, WREN (1942). No particulars announced. Only launching date available is that of *Wren*, second ship of type to be sent down the ways. Main armament appears to be 6 4" twinned behind shields.

The British navy has a number of vessels rated as sloops which correspond to American gunboats. The modern sloop originated as a highly effective patrol vessel in colonial areas. Its lack of speed limits its usefulness as an anti-submarine escort—against U-boats, vessels like frigates are much more efficient—but the heavy armament, now entirely AA, has made it a handy type to the British, whose home waters have been beset by aircraft as well as submarines. The Wren class appears to be a modification of the Black Swan type.

3 Black Swan Class Sloops

BLACK SWAN (1939), FLAMINGO (1939), ERNE (1940). Standard Displacement: 1,250 tons. Dimensions unreported. Propulsion: Geared turbines, 3,600 SHP. Speed: 19.25 kts. Armament: 6 4" AA twinned behind shields; 10 smaller AA.

Ibis, fourth vessel of the Black Swan class, was lost during the Allied landing in Algeria.

2 Egret Class Sloops

EGRET, PELICAN (both 1938). Standard Displacement: 1,200 tons. Dimensions: 276' w.l.

x 37' 6" x 8' 4". Propulsion: Two screws, two sets geared turbines, 3,600 SHP. Speed: 19.25 kts. Armament: 8 4" AA twinned behind shields; 7 smaller AA.

Auckland, a sister of the *Egret*, was sunk off Tobruk in 1941.

1 Stork Class Sloop

STORK (1936). Standard Displacement: 1,190 tons. Dimensions: 266' w.l. x 37' x 8' 3". Propulsion: Geared turbines, 3,300 SHP. Speed: 18.75 kts. Armament: 6 4" AA twinned behind shields; 5 smaller AA.

The *Stork* is a former British Navy surveying vessel, armed for its present duties in 1939.

2 Aberdeen Class Sloops

ABERDEEN, FLEETWOOD (both 1936). Standard Displacement: 990 tons. Dimensions: 266' x 36' x 7' 6". Propulsion: Two screws, two sets geared turbines, 2,000 SHP. Speed: 16.5 kts. Armament: 4 single 4" AA, 9 smaller AA.

In peacetime, the *Aberdeen* is a sort of hotel-and-office ship attached to the flagship of the Mediterranean fleet; she then sacrifices two four-inch guns to provide space for extra deckhousing aft. The Aberdeens are modifications of the Leith type.

1 Enchantress Class Sloop

ENCHANTRESS (ex-*Bittern*, 1934). Standard Displacement: 1,085 tons. Dimensions: 266' w.l. x 37' x 8' 6". Propulsion: Geared turbines, 3,300 SHP. Speed: 18.75 kts. Armament: 3 single 4" AA, some smaller AA.

The *Enchantress* is a former Admiralty yacht, guns substituted for dockhouses in 1939.

5 Leith Class Sloops

LEITH (1933), LOWESTOFT (1934), WELLINGTON (1934), DEPTFORD (1935), LONDON-DERRY (1935). Standard Displacement: 990 tons. Dimensions: 266' x 36' (*Deptford*, *London-derry*), 34' (others) x 7' 6" (*Deptford*, *Londonderry*), 7' 3" (others). Propulsion: Geared turbines, 2,000 SHP. Speed: 16.5 kts. Armament: 2 4.7", 1 3" AA, 4 3-pounder (*Deptford*, *Londonderry*) or 2 3-pounder (others), 10 MG. *Grimby* of Leith type was sunk in action, 1941.

7 Lulworth Class Sloops

LULWORTH (ex-*Chelan*, 1928), SENNEN (ex-*Champlain*, 1928), FISHGUARD (ex-*Tahoe*, 1929), BANFF (ex-*Saranac*, 1930), GORLESTON (ex-*Itasca*, 1930), LANDGUARD (ex-*Shoshone*, 1930), TOTLAND (ex-*Cayuga*, 1930). Standard Displacement: 1,975 tons (*Banff*, *Gorleston*, *Totland*), 1,983 (others). Dimensions: 250' x 42' x 16'. Propulsion: Turbo-electric, 3,220 SHP. Speed: 16 kts. Armament unreported.

The Lulworths are former U. S. Coast Guard cutters turned over to Britain in 1941. They are of much deeper draft than the average sloop, having been built for such strenuous sea duties as maintenance of the international ice patrol. Three of the Lulworths have been lost: *Culver* (ex-*Mendota*), *Hartland* (ex-*Panchartrain*) and *Walney* (ex-*Sabago*).

3 Falmouth Class Sloops

FALMOUTH, MILFORD, WESTON (ex-*Weston-super-Mare*) (all 1932). Standard Displacement: 1,060 tons. Dimensions: 266' x 34' x 8' 9". Other details similar to Bridgewater class.

The *Dundee*, a fourth ship of the Falmouth type, closely resembling the *Shoreham*, *Hastings* and *Bridgewater* classes, has been lost.

4 Shoreham Class Sloops

POWEY (1930), SHOREHAM (1930), BRIDFORD (1931), ROCHESTER (1931). Standard Displacement: 1,105 tons. Dimensions: 266' x 34' x 9'. Other specifications as *Bridgewater*.

3 Hastings Class Sloops

FOLKESTONE, HASTINGS, SCARBOROUGH (all 1930). Standard Displacement: 1,025 tons (*Hastings*), 1,045 (others). Dimensions: 266' x 34' x 8'. *Hastings* fitted as minelayer. Other specifications as *Bridgewater* class.

Penzance, torpedoed in 1940, was a sister of these vessels.

2 Bridgewater Class Sloops

BRIDGEWATER, SANDWICH (both 1928). Standard Displacement: 1,045 tons. Dimensions: 266' x 34' x 8' 3". Propulsion: Two screws, two sets geared turbines, 2,000 SHP. Speed: 16 kts. Armament: Originally, 2 4" AA and 9 smaller; believed now changed to 6 twinned 4" AA and some smaller AA. Fitted for minesweeping.

2 Lupin Class Sloops

ROSEMARY (1915), LUPIN (1916). Standard Displacement: 1,175 tons. Dimensions: 267' 9" x 33' 6" x 11'. Propulsion: Single screw, reciprocating engine, 2,000 HP. Speed: 16.5 kts. Armament: 2 4" AA, several smaller.

Possibly reclassified as corvettes.

1 Foxglove Class Sloop

FOXGLOVE (1915). Standard Displacement: 1,165 tons. Dimensions: 262' 6" x 33' x 11'. Propulsion: Single screw, reciprocating engine, 1,800 HP. Speed: 18 kts. Armament: 2 4" AA, several smaller.

Possibly now rated as a corvette.

Armed Merchant Cruisers

The Royal Navy has also made extensive use of armed merchant cruisers as escort vessels. No names, however, have been announced except of the 14 which have been lost (see British war loss section). Merchant cruisers are generally ex-passenger liners of intermediate size (up to 20,000 tons gross) and greater than 20 knots speed. They are loaded with lightweight flameproof substances to increase their buoyancy (as a sort of substitute for the compartmentation of the regular warship) and their usual armament consists of guns up to six inches in caliber.

Miscellaneous Converted Escorts

The British have converted many craft of other than passenger liner type to escort duties. One such, employed on coastal convoy work, is the *Royal Eagle*, former Thames River paddle steamer. Names, however, are generally announced only if the vessels are lost.

AA Escorts

In addition to old cruisers of such types as the *Cairo*, Great Britain has armed a great many former merchantmen and the like as anti-aircraft escort vessels. Ships of speeds greater than 15 knots appear to be preferred for this purpose. Among such vessels are a number of former cross-Channel steamers, which are generally quite fast (some exceed 21 kts.) and have ample deck and stowage space for guns and ammunition. Armament is generally Bofors and/or 4" AA. Several AA escort vessels have probably been lost, but the only casualty so far identified as such is *Tynwald*, lost in the Algerian landing operation, 1942.

Armed Yachts

A large number of privately-owned vessels of the yacht type have been placed in service as armed yachts. Other than those which have been lost, however, the only name so far made public is that of *Philante*, a modern cruising yacht of about 500 tons.

GREAT BRITAIN - SUBMARINES

During 1942-43, British newspapers reported the launch of a submarine identified only as the *P-326*, and there were also reports of vessels listed as *P-34*, *P-36* and *P-37*. In addition, the Admiralty announced the loss of undersea craft *P-32*, *33*, *38*, *48*, *222*, *311* and *615*. These may represent vessels other than those listed below; the chances are, however, that in most cases these are merely numerical designations of named ships. For example, the submarine *Umbra* is known to be the ex-*P-35*. Also, each hundred probably refers to a different class of vessel; thus, those below 100 seem to be Ursulas; and those in the 200s and 300s are Tridents and Seals (which is which, however, is not known). *P-615* refers to still another type, possibly one of the midtjets like those which disabled the Nazi *Tirpitz*.

British forces in 1940 captured the Italian *Galileo Galilei* (Archimede class) in the Red Sea, but whether she has been placed in service under the British flag has not been disclosed. Britain has built at least four submarines for her Allies (*Dzik* and *Sokol* for Poland, and *Jour de Gloire* and *Curie* for the French National Committee, all of Ursula type), and completed a fifth, *Dolfijn*, launched in Holland in 1940, for the Netherlands, in addition to providing for her own undersea needs. *Ula* of the Norwegian navy may also be British-built.

11 or more Trident Class

Photo Page 137

TRIBUNE (1938), TRIDENT (1938), TAKU (1939), TRUANT (1939); TACTICIAN, THRASHER, TORBAY, TRESPASSER, TRUCULENT, TRUSTY, TUNA and others (all 1940-43). Displacement: Surface, 1,090 tons; submerged, 1,575. Dimensions: 275' x 26' 6" x 12'. Propulsion: Diesels (2,500 HP) and electric motors (1,450 HP). Speed: Surface, 15.25 kts.; submerged, 9. Armament: 10 21" TT, 1 4" (possibly AA), 2 smaller.

The *Trident* and her sisters are one of three standard types of submarine making up the British wartime submarine building program, the others being the Ursulas and Sealions. The Tridents, the largest of the three, are considerably smaller than many British undersea craft of 1926-37. For the duration, additional Tridents will often be named only if lost. The *Truant* is the vessel that sank the Nazi cruiser *Karlsruhe*. Fifteen submarines with T names have been lost. They are probably all of the Trident type: *Talisman*, *Tarpon*, *Tempest*, *Tetrarch* (two ships of this name), *Thistle*, *Thorn*, *Thunderbolt* (ex-*Thetis*, lost at entrance to Liverpool harbor in 1939, raised, refitted and renamed), *Tigris*, *Traveller*, *Triad*, *Triton*, *Triumph*, *Trooper* and *Turbulent*.

21 or more Ursula Class

Photo Page 136

UNITY (1938), URSULA (1938); ULLSWATER, ULTIMATUM, UMBRA (ex-*P-35*), UNA, UNBENDING, UNBROKEN, UNISON, UNITED, UNIVERSAL, UNRIVALLED, UNRUFFLED, UNRULY, UNSEEN, UNSHAKEN, UNSPARING, UPRIGHT, UPROAR and others (all 1940-43). Displacement: Surface, 540 tons; submerged, 730. Dimensions: 180' x 16' x 12' 9". Propulsion: Diesels (615 HP) and electric motors (825 HP). Speed: Surface, 15.25 kts.; submerged, 10. Armament: 8 21" TT, 1 3".

A frequent characteristic of British submarines, dating back to the last war when the famed R class vessels with very high below-surface speeds were built to hunt and torpedo or ram the Kaiser's U-boats, is a more powerful below-water than surface powerplant. The Ursulas, one of three standard British war emergency program submarines, are of this type, although for a different reason than was the case with the Rs. The British simply see little point to giving vessels like the *Ursula* high speed for surface cruising. The Ursulas and Sealions, another present standard British design, are built for operations in European coastal waters—along the German and French coasts and in the Mediterranean—where surfacing in the sight of the enemy is suicidal regardless of surface speed. So the Ursulas have relatively small engines, but greater than usual torpedo capacity. The Ursulas have been quite successful, many times penetrating the North Sea rivers at whose mouths Cuxhaven and Wilhelmshaven, two of the Reich's many naval bases, are situated. Ten Ursulas have been reported lost or missing: *Unbeaten*, *Undaunted*, *Undine*, *Union*, *Unique*, *Uproar*, *Urge*, *Usk*, *Usurper* and *Utmost*. Four submarines built in England for Poland and Free France and not listed above (*Dzik*, *Sokol*, *Jour de Gloire* and *Curie*) are evidently Ursulas, as possibly also *Ula* of Norway.

11 or more Sealion Class

Photo Page 136

SEALION (1934), SEAWOLF (1935), SUNFISH (1936); SAFARI, SEADOG, SEANYMPH, SERAPH, SHAKESPEARE, SIBYL, SICKLE, SPORTSMAN and others (all 1940-41). Displacement: Surface, 670 tons; submerged, 960. Dimensions: 202' 6" w.l. x 24' x 10' 6". Propulsion: Diesels (1,900 HP, *Sunfish*; 1,550, others) and electric motors (1,300 HP). Speed: Surface, 15 kts. (*Sunfish*), 13.75 (others); submerged, 10. Armament: 6 21" TT (all bow), 1 3", 1 MG.

The Sealions, a mid-thirties British design put back into production as one of the war emergency types, are much smaller than the bulk of contemporary American undersea craft. Most of recent British craft, however, are designed for operations in the North Sea and at other points close to Europe. The Sealions are improved, slightly enlarged editions of the *Sturgeon*. Eight Sealions have been announced as lost: *Sahib*, *Salmon*, *Saracen*, *Shark*, *Snapper*, *Spearfish*, *Splendid* and *Sterlet*.

1 Rorqual Class

Photo Page 136

RORQUAL (1936). Displacement: Surface, 1,520 tons; submerged, 2,157. Dimensions: 271' 6" x 25' 6" x 15'. Propulsion: Diesels (3,300 HP) and electric motors (1,630 HP). Speed: Surface, 15.75 kts.; submerged, 8.75. Armament: 6 21" TT (all bow), 1 4", 2 MG; fitted as minelayer.

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The *Rorqual* is the sole survivor of a group of six vessels, the missing members of which are the *Cachalot*, *Grampus*, *Narwhal* and *Seal*. The *Seal* is believed to have been captured and refitted by the Germans for their own use. The *Rorqual* bears a close resemblance to the *Porpoise* (below).

2 Severn Class

Photo Page 137

SEVERN, CLYDE (both 1934). Displacement: Surface, 1,850 tons; submerged, 2,723. Dimensions: 325' x 28' (Severn), 28' 2" (Clyde) x 13' 10" (Severn), 13' 9" (Clyde). Propulsion: Diesels (10,000 HP) and electric motors (2,500 HP). Speed: Surface, 22.25 kts.; submerged, 10. Armament: 6 21" TT (all bow), 1 4", 2 MG.

The *Severn* and *Clyde*, and a sister which was lost in 1940, the *Thames*, were the first Diesel-powered submarines to exceed 21 knots on the surface (French steam-powered undersea craft had already exceeded that). They are, however, a striking example of the price of speed in a submersible with conventional powerplant. Despite their great size, their armament is only six torpedo tubes, a single four-inch gun and a brace of machine guns.

1 Porpoise Class

PORPOISE (1932). Displacement: Surface, 1,500 tons; submerged, 2,053. Dimensions: 267' x 29' 10" x 13' 9". Propulsion: Diesels (3,300 HP) and electric motors (1,630 HP). Speed: Surface, 15 kts.; submerged, 8.75. Armament: 6 21" TT (all bow), 1 4", 2 MG; fitted as a minelayer.

1 Sturgeon Class

STURGEON (1932). Displacement: Surface, 640 tons; submerged, 927. Dimensions: 200' 9" w.l. x 23' 6" x 10' 4". Propulsion: Diesels (1,550 HP) and electric motors (1,300 HP). Speed: Surface, 13.75 kts.; submerged, 10. Armament: 6 21" TT (all bow), 1 3", 1 MG.

The *Sturgeon* is the last of four identical vessels. The others, all lost in action, were the *Seahorse*, *Starfish* and *Swordfish*.

1 Rover Class

Photo Page 136

ROVER (1930). Displacement: Surface, 1,475 tons; submerged, 2,030. Dimensions: 260' x 28' x 13' 10". Propulsion: Diesels (4,400 HP) and electric motors (1,320 HP). Speed: Surface, 17.5 kts.; submerged, 9. Armament: 8 21" TT, 1 4", 2 MG.

Rainbow, *Regent* and *Regulus*, lost in 1940, 1943 and 1941 were sisters of the *Rover*.

2 Pandora Class

PANDORA (ex-*Python*), PROTEUS (both 1939). Displacement: Surface, 1,475 tons; submerged, 2,040. Dimensions: 260' x 28' x 13' 8". Propulsion: Diesels (4,400 HP) and electric motors (1,350 HP). Speed: Surface, 17.5 kts.; submerged, 9. Armament: 8 21" TT (six bow, two stern), 1 4", 2 MG.

Poseidon of this type was lost by collision in the Yellow Sea in 1931. Late sisters *Parthian*, *Phoenix* and *Perseus* are war casualties. The *Pandoras* are similar to *Oberon* and *Otway*, except for more powerful Diesels and higher surface speed.

2 Osiris Class

OSIRIS, OTUS (both 1928). Displacement: Surface, 1,475 tons; submerged, 2,038. Dimensions: 283' 6" x 28' x 13' 6". Propulsion: Diesels (4,400 HP) and electric motors (1,320 HP). Speed: Surface, 17.5 kts.; submerged, 9. Armament: 8 21" TT (six bow, two stern), 1 4", 2 MG.

Odin, *Olympus*, *Orpheus* and *Oswald*, all war losses, were of the *Osiris* type. Like the *Pandoras*, the *Osiris* and *Otus* are improved, faster editions of the *Oberon* and *Otway*.

1 Otway Class

Photo Page 137

OTWAY (ex-AO-2, 1926). Displacement: Surface, 1,349 tons; submerged, 1,872. Dimensions: 275' x 27' 9" x 13' 6". Propulsion: Diesels (3,000 HP) and electric motors (1,350 HP). Speed: Surface, 13.5 kts.; submerged, 9. Armament: 8 21" TT (six bow, two stern), 1 4", 2 MG.

The *Otway*, similar to the *Oberon* in design, was built for the Australian navy, which donated it to Britain in 1931. *Oxley*, a sister ship built for Britain, was lost in an accidental explosion in 1939.

1 Oberon Class

OBERON (ex-O-1, 1925). Displacement: Surface, 1,311 tons; submerged, 1,831. Dimensions: 270' x 28' x 13' 3". Propulsion: Diesels (2,950 HP) and electric motors (1,350). Speed: Surface, 15 kts.; submerged, 9. Armament: 8 21" TT (six bow, four stern), 1 4", 2 MG.

3 L Class

L-23, L-26, L-27 (all 1918-19). Displacement: Surface, 760 tons; submerged, 1,080. Dimensions: 238' 6" x 23' 6" x 13' 9". Propulsion: Diesels (2,400 HP) and electric motors (1,600 HP). Speed: Surface, 17.5 kts.; submerged, 10.5. Armament: 4 21" TT, 1 4", 1 MG.

The three L's are the remainder of a once extremely large class of vessels built during the last war. The only other survivor is the *L-55*, now in the Soviet Navy. Most of the class was scrapped during the years between wars.

1 ex-U.S. R Class

P-511 (ex-R-3, 1919). Displacement: Surface, 530 tons; submerged, 680. Dimensions: 188' 1" x 17' 6" x 13' 8". Propulsion: Diesels (800 HP) and electric motors (934 HP). Speed: Surface, 13.5 kts.; submerged, 10.5. Armament: 4 21" TT, 1 3".

The *P-511* is one of two U. S. submarines transferred to Britain in November, 1941, the other being the *S-26*, subsequently re-transferred to the Polish navy and lost.

7 H Class

Photo Page 137

H-28, H-32, H-33, H-34 (all 1918); H-43, H-44, H-50 (all 1919). Displacement: Surface, 410 tons; submerged, 500. Dimensions: 170' x 15' 9" x 12' 6". Propulsion: Diesels (480 HP) and electric motors (320 HP). Speed: Surface, 13 kts.; submerged, 10. Armament: 4 21" TT.

H-31 and *H-49* were lost in action, 1940; *H-29*, 42 and 47, sunk in accidents in the 'twenties. Other missing units (class once went up to *H-52*), were scrapped in the 'thirties.

Midget Type

In September, 1943, the Admiralty revealed the existence of a number of midget British submarines when it was announced that such craft had penetrated Alten Fjord in northern Norway on Sept. 22, scoring torpedo hits and effectively immobilizing the Nazi *Tirpitz*. Britain's baby submersibles, possibly inspired by the midgets Japan used unsuccessfully in attacks on Pearl Harbor and Sydney, Australia, appear to be about 50 tons in surface displacement, have two-man crews. Four were stated to have been lost in the attack on the *Tirpitz*.

GREAT BRITAIN - AUXILIARIES AND SPECIAL TYPES

MONITORS

1 Erebus Class

Photo Page 139

ERE8U5 (1916). Standard Displacement: 7,200 tons. Dimensions: 405' x 88' x 11'. Propulsion: Two screws, reciprocating engines, 6,000 HP. Speed: 12 kts. Armament: 2 15"/42 in twin turret; 2 3" AA (possibly since increased), 12 smaller AA. Armor: 4.5"-13" turret; 3.75"-6.5" decks (total); 6" conning tower.

The *Erebus* and a sister ship, *Terror*, lost off the Libyan coast, were built during the last war primarily for coastal bombardment (note their shallow draft). The *Erebus'* guns come from another, demilitarized monitor, *Marshal Ney*, now the stationship *Drake* at Devonport. The 15" guns are on high angle mounts and range up to 40,000 yards.

1 Marshal Soult Class

MARSHAL SOULT (1915). Standard Displacement: 6,400 tons. Dimensions: 355' 8" x 90' 3" x 10' 6". Propulsion: Four screws, two sets Diesels 1,500 HP. Speed: 6.5 kts. Armament: 2 15"; some smaller. Armor: 4.25"-13" turret; decks totaling 4.5"-6".

The *Marshal Soult*, sister of the now demilitarized *Marshal Ney* (Devonport stationship; present name, *Drake*), was rated a gunnery training vessel at the beginning of the war. She may have been armed with additional light guns and been re-engined for coast bombardment work.

EX-BATTLESHIP

1 Iron Duke Class

IRON DUKE (1912). Standard Displacement: 21,250 tons. Dimensions: 580' pp. x 90' x 26'. Propulsion: Reciprocating engines. Speed: 18 kts. Armament: 6 13.5" in twin turrets; 12 6"; several smaller.

The *Iron Duke*, demilitarized in 1931 under the London naval treaty, was used as a gunnery training vessel up to 1939. She may have been rearmed and re-engined since for war duties.

MOTOR TORPEDO BOATS

American-built Types

Beginning in 1940, the U. S. Navy sold or transferred to the Royal Navy a minimum of 10 MTBs, including the original PT-6 and other "low number" PTs. The PT-6 is of the Higgins type. Others doubtless include Electric Boat Co. models, which are improved editions of later British Power Boat Co. designs. Vosper type craft were also being built in the United States under lend-lease in 1943. The Royal Navy designates American-built MTBs as BPTs.

Over 78 of Various Types

Since 1940, the numbers of 78 MTBs have been published in the British press as having been launched or completed. The published numbers, of course, by no means represent all of the MTBs built in Britain in that time. No particulars of these craft have been published, but many are doubtless of the 32-ton type listed below. Later numbers may be heavier, to improve sea-keeping qualities, a feature in which earlier British MTBs compare unfavorably with German models. Eight MTBs, British-built, are manned or owned by the Norwegian navy, possibly from among the vessels listed here. The vessels so far identified, which may not include 10 craft announced as ordered under the 1936, 1938 and 1939 programs, are:

MTB 30-32, 34, 35, 42, 48, 49, 55, 57-65, 69-73, 75-79, 82-86, 88-91, 93-97, 202, 205-211, 215, 219, 223-226, 229, 230, 232-236, 238, 241, 332-337, 339-344, 346.

Additional numbers reported from the Mediterranean battlefront: 633, 637.

Eight to ten MTBs have been announced as lost, but their identities have not been revealed.

3 No. 22 Type

MTB 22, 24, 25 (all 1939). Displacement: 32 tons. Dimensions: 72' x 16' 6" x 3' 9". Propulsion: Three Isotta-Fraschini gasoline engines (with auxiliary engines for cruising; main engines take hold automatically at 9 kts.), 3,450 HP. Speed: Over 40 kts. (40 kts. on three-fourths power). Armament: 2 21" TT; 2 MG AA.

The No. 22 type is an improved version of the 102.

2 No. 102 Class

Photo Page 140

MTB 102 (1937), 103 (1939). Displacement: 28 tons. Dimensions: 68' x 14' 9" x 3' 2". Propulsion: Three Isotta-Fraschini gasoline engines, 3,000 HP. Speed: 43.7 kts. Armament: 2 21" TT; 2 Oerlikon 20 mm AA AC, in twin mount.

13 British Power Boat Type

MTB 1 (ex-7), 2-6, 14-18, 19 (ex-1), 100 (1936-38). Displacement: 18 tons. Dimensions: 60' x 13' 3" x 2' 10". Propulsion: Three Napier gasoline engines, 1,500 HP. Speed: 35 kts. Armament: 2 18" TT in troughs; 8 Lewis guns (light MGs).

The above MTBs were the first vessels of the widely known British Power Boat design and among the first MTBs to be built since the last war. They themselves were not especially successful, nor were their immediate successors (built under license in the U. S. by the Electric Boat Co.), as their hulls were too tender for work in the open sea. They are basically pleasure boats with big engines. Later designs, however, are much more rugged and satisfactory and have eliminated most of the earlier "bugs."

MOTOR GUN BOATS

U. S.-built 72-foot type (?)

On Nov. 20, 1942, the Milton Point Yard of W. E. John & Associates, Rye, N. Y., launched the Q-1360, which was immediately transferred to Great Britain under lend-lease. She was described as a 72-foot patrol boat for anti-submarine and convoy duties, with an armament of guns and depth charges, and as one of a series under construction at the Milton Point Yard. She appears to be a motor gunboat.

Over 19 of Various Types

Since 1940, the British press has reported the numbers of 19 vessels classed as motor gun boats. No specifications of British MGBs have been made public, but data on three built in Britain in 1940 for the Polish navy (S-1-3), make it appear that they are modifications of the 32-ton type of MTB with mixed gun and depth charge armament. Specifications of the Polish vessels are: Dimensions, 72' x 16' 9" x 5' 6"; displacement, 34 tons; three Isotta-Fraschini engines, 3,450 HP; speed, 42 kts.; Lewis guns and depth charge armament. MGBs are of great value in coastal convoy work as well as the constant skirmishing and hit-and-run lighting in the Channel. Two to four MGBs, numbers unstated, have been announced by the Admiralty as lost. Published MGB numbers are:

MGB 40-42, 50-58, 60, 61, 64, 110, 312, 327, 333.

MINELAYERS

1 Manxman Class

MANXMAN (1940). Standard Displacement: 2,650 tons. Length, 450'; other dimensions unreported. Propulsion: Two screws, two sets geared turbines, 72,000 SHP. Speed: 40 kts. Armament: 6 4.7" AA twinned; several smaller; mine capacity and laying equipment unreported.

The *Manxman* is the only survivor of a class of four vessels (others: *Abdiel*, *Latona*, *Welshman*, war losses), built for the specific purposes of fleet minelaying (i.e., covering withdrawal of a fleet with a "rear guard" of mines) and mining operations in enemy-dominated waters, hence their high speed.

1 Adventure Class

ADVENTURE (1924). Standard Displacement: 6,740 tons. Dimensions: 520' x 59' x 19' 3". Propulsion: Four screws, geared turbines (with Diesels and electric drive for cruising), 40,000 total HP. Speed: 28 kts. Armament: 4 4.7" AA; 4 3-pounder AA; 18 smaller, including multiple pompoms; mine capacity, 340.

2 Linnet Class

LINNET, RINGDOVE (both 1938). Standard Displacement: 498 tons. Dimensions: 163' 9" x 27' 2" x 8'. Propulsion: Reciprocating engine.

The *Linnet* and *Ringdove* are coastal minelayers.

1 Plover Class

PLOVER (1938). Standard Displacement: 805 tons. Dimensions: 195' 3" x 37' 6" x 8' 2". Propulsion: Reciprocating engine, 1,400 HP. Speed: 14.75 kts. Armament: 2 MG.

The *Plover* is a coastal minelayer.

3 Medusa Class

MEDUSA (ex-M-29), MELPOMENE (ex-M-31), MINERVA (ex-M-33) (all 1915). Standard Displacement: 535 tons. Dimensions: 177' x 31' x 6' 9". Propulsion: Two screws, reciprocating engine, 400 HP. Speed: 10 kts. Mine capacity: 52.

These three World War I craft are coastal minelayers. *Minerva* was to have been scrapped in 1939. All three may now be used only on harbor duties.

FLEET MINESWEEPERS

2 or more American Raven Class

STRENUOUS (ex-*Vital*), TOURMALINE (ex-*Usage*) (both 1942). Standard Displacement: 700 tons. Length, 220'; other dimensions unreported. Propulsion: Diesels, 2,000 HP. Speed: 18 kts. Armament (original, possibly changed): 2 5"/3B DP; possibly some smaller.

The *Strenuous* and *Tourmaline* are American-built minesweepers of the Raven type, transferred to Britain under lend-lease in 1942 or 1943. They may now mount other than 5" guns, as five inches is not a standard British caliber.

Over 26 Alarm Class

ACUTE, ALARM, ALBACORE, ANNAN, ANTARES, ARCTURUS, ARIES, CADMUS, CIRCE, COCKATRICE, ESPIEGLE, FANTOME, FLY, HOUND, HYDRA, MUTINE, ONYX, PICKLE, PINCHER, RATTLER, READY, RINALDO, ROSARIO, SPANKER, VESTAL, WATERWITCH. No details reported, but resemble Bangor type. Are possibly identical with 93B-ton Australian Bendigos (improved Bangors) or Canadian Clintons (also improved Bangors, which may likewise be identical with Bendigos).

38 or more Bangor Class

ARDROSSAN, BANGOR, BAYFIELD, BEAUMARIS, BLACKPOOL, BLYTH, BOOTLE, BOSTON, BRIDLINGTON, BRIDPORT, BRIXHAM, BUDE, CANSO, CARAQUET, CLACTON, DORNOCH, DUNBAR, EASTBOURNE, FELIXSTOWE, GUYSBOROUGH, HYTHE (ex-*Banff*), ILFRACOMBE, INCONISH, LLANDUDNO, LYME REGIS, PETERHEAD, POLRUAN, POOLE, RHYL, ROMNEY, ROTHESAY, RYE, SEAHAM, SIDMOUTH, STORNOWAY, TENBY, WHITE HAVEN, WORTHING. Standard Displacement: 750 tons. Dimensions: 180' x 28' 6" x 9' 6". Propulsion: Two screws, reciprocating engine, 1,400 HP. Speed: 16 kts. Armament: 1 4" AA; 1 3" AA; several smaller.

Britain's Bangors, originally begun as replacements for the World War I Albury class of minesweepers (kept in service, of course, when World War II intervened), have proved a successful type, serving both as 'sweepers and coastal escorts. Five of the above, built in Canadian yards, are on loan to the Canadian navy (*Bayfield*, *Canso*, *Caraquet*, *Guysborough* and *Ingonish*). Several others were also built in Canadian yards. *Cromarty* of Bangor type was lost in 1943.

17 Halcyon Class

HALCYON (1933), HARRIER (1934), HUSSAR (1934), SPEEDWELL (1935), NIGER (1936), SALAMANDER (1936), SHARPSHOOTER (1936), FRANKLIN (1937), GLEANER (1937), GOS-SAMER (1937), HAZARD (1937), JASON (1937), SCOTT (1937), SEAGULL (1937), BRITOMART (1938), SPEEDY (1938). Standard Displacement: 875 tons (*Britomart*, *Speedy*), 835 (*Hazard*, *Hebe*, *Sharpshooter*, *Jason*, *Gleaner*), 815 (others). Dimensions: 230' x 33' 6" x 7' 3" (*Britomart*, *Gossamer*, *Seagull*, *Speedy*), 6' 10" (others). Propulsion: Reciprocating engines in first four and *Niger* and *Salamander*, 1,770 HP; turbines in others, 2,000 SHP. Speed: Reciprocating engined vessels, 16.5 kts.; others, 17. Armament: 2 4" AA; several smaller.

Seagull of this type was the first all-welded ship in the British Navy. Five Halcyons have been lost: *Bramble*, *Hebe*, *Leda*, *Skipjack*, *Sphinx*. Halcyon class ships are named for defunct minesweepers of the last war. *Franklin* and *Scott* were employed as surveying vessels before 1939, and armed as minesweepers after the outbreak of the war.

21 Albury Class

ABERDARE, ABINGDON, ALBURY, ALRESFORD, BAGSHOT, DERBY (ex-*Dawlish*), ELGIN (ex-*Troon*), FAREHAM, FERMOY, HARROW, KELLETT (ex-*Uppingham*), LYDD (ex-*Lydney*), PANGBOURNE (ex-*Padstow*), ROSS (ex-*Ramsey*), SALTASH, SALTBURN, SELKIRK, STOKE (ex-*Southwold*), SUTTON (ex-*Salcombe*), TEDWORTH, WIDNES (ex-*Withernsea*) (all 1917-1919). Standard Displacement: 675 (*Tedworth*), 710 (others). Dimensions: 231' x 28' (*Tedworth*), 28' 9" (others) x 7' 6". Propulsion: Two screws, two sets reciprocating engines, 1,800 HP (*Tedworth*), 2,200 (others). Speed: 16 kts. Armament: 1 4"; several smaller.

The Alburys are War I emergency minesweepers but are giving good service in this war, too. *Dundalk*, *Dunoon*, *Fitzroy* and *Huntley* (ex-*Helmsdale*) of Albury type have been lost, 1940-42. Four others were scrapped in 1933 and 1936 and one, *Petersfield*, was lost in 1932. *Kellett* served as a surveying ship between wars. Before the war, most Alburys were stationed at Malta or Singapore.

1 Herald Class

HERALD (ex-*Merry Hampton*, 1918). Standard Displacement: 1,320 tons. Dimensions: 276' 6" x 35' x 12'. Propulsion: Reciprocating engine, 2,500 HP. Speed: 17 kts. Armament: 1 4"; several smaller.

The *Herald* is a World War I minesweeper used as a surveying vessel 1925-39 and now back in service as a 'sweeper. *Moresby*, donated to the Australian navy in 1925, likewise a peacetime surveyor, is a sister ship.

MOTOR MINESWEEPERS

American YMS Type

On the Royal Navy list are an unstated number of motor minesweepers designated BYMS, lend-leased U. S.-built craft of the standard American YMS type. They are of wood construction, 135' 6" x 24' x 6' in dimensions, 260 tons in displacement and Diesel-powered (two sets, total HP, 1,200). Other particulars are restricted.

AUXILIARY MINESWEEPERS

DUCHESS OF FIFE, MARMION, MEDWAY QUEEN, ORIOLE, QUEEN-EMPRESS, SANDOWN.

Above vessels appear on the latest Admiralty list of British naval craft. No details are available, but they are most likely converted vessels of some kind.

TARGET SHIP

CENTURION (1911). Ex-battleship. Standard Displacement: 28,500 tons. Dimensions: 555' p.p. x 89' x 30'. Speed: 16 kts.

The *Centurion*, which has had all her armament removed and her gunports sealed, is radio-controlled, doubtless the largest such vessel in existence. No crew need be aboard her when British men-of-war up to heavy cruisers (she can withstand the impact of eight-inch shell) sharpen their aim on her. Radio not only alters her speed and helm at will, but regulates the flow of oil to her boiler furnaces.

RIVER GUNBOATS

LOCUST (1940). Standard Displacement: 585 tons. 197' x 33' x 5'. 17 kts. 2 4" AA, 1 4.7" howitzer, 8 MG. Sole survivor of class of four. Others, all war losses, were the *Dragonfly*, *Grasshopper* and *Mosquito*.

SEAMEW, TERN (1927). Standard Displacement: 262 tons. 167' 6" x 27' x 5' 2". 14 kts. 2 3" AA, B MG.

Insect Class: APHIS, COCKCHAFER, CRICKET, GNAT, SCARAB, TARANTULA (all 1918). Standard Displacement: 628 tons. 237' 6" x 36' x 4'. Burn both oil and coal. Twin screws are in tunnels to allow entry to shallow water. 14 kts. 2 6" (except *Tarantula*, 1 6"), 1 3" AA. 10 MG. *Cicada*, *Ladybird* and *Moth*, lost 1941-2, were of *Insect* class.

TRAWLERS

Photo Page 139

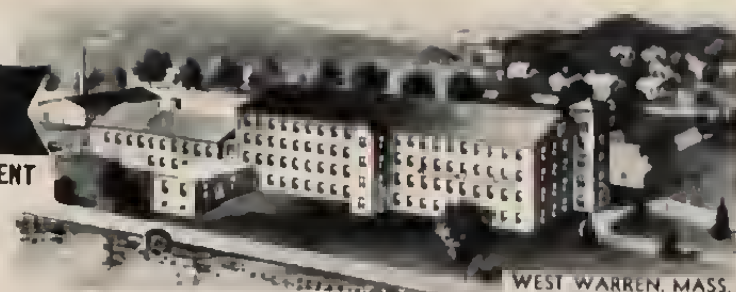
In place of the many classifications employed in the U. S. for small vessels used as coastal minesweepers, coastal pickets, etc., the British navy classifies most such craft as what they really are—trawlers. Hundreds of trawlers, both specially built and converted types, are on the Royal Navy list. Many of the trawlers recently built by the Royal Navy stem from the *Basset*, a successful type designed in 1934. Modified *Basset*s are under construction in India and elsewhere in the empire as well as in Britain. All carry depth charges and most, if not all, have minesweeping gear. Following is as complete a list of Royal Navy trawlers as is now possible:

Type Uncertain: (at least some converted from commercial vessels) ARCTIC HUNTER, ASAMA, CAYRIAN, EARL KITCHENER, EMERALD, FITZGERALD, GWENLLIAN, REBOUND, ROLLS ROYCE, ST. MELANTÉ, SEA HOLLY, STAUCH, STELLA RIGEL, SWEET PROMISE.

Isles Class: BERN, BORERAY, BRESSAY, BRURAY, COLL, DAMSAY, EARRAID, EGILSAY, ENSAY, FIARAY, FILLA, GAIRSA, GRAEMSAY, GRUINARD, HUNDA, LUNDY, RAASAY,



LONG ISLAND CITY, N. Y.



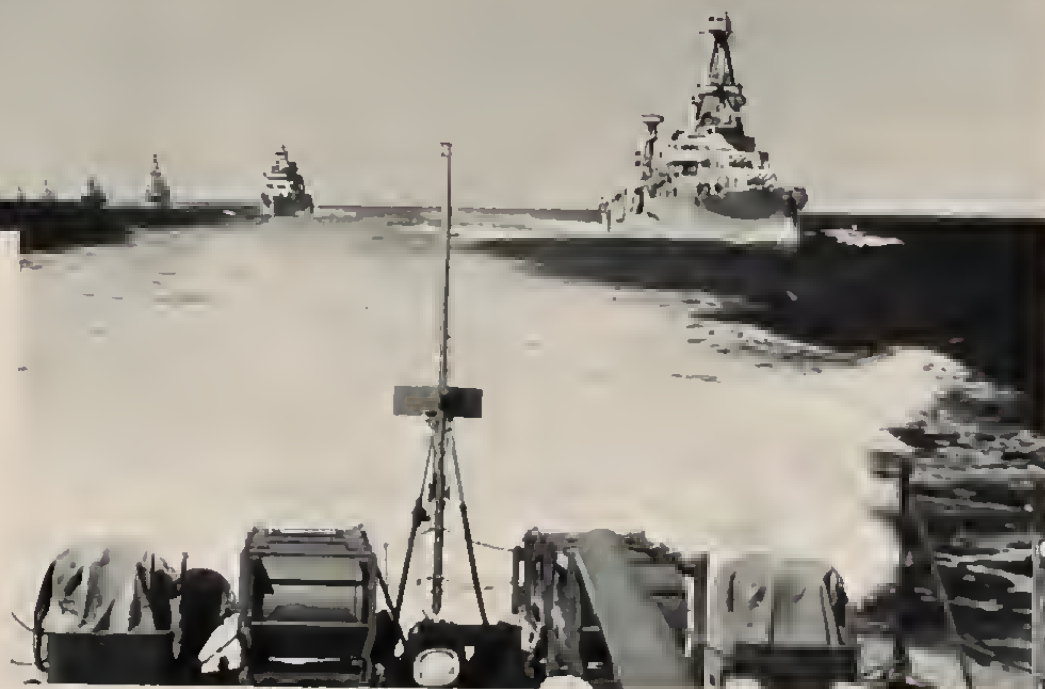
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Among the vessels that have been or are now being furnished by Metropolitan, are:

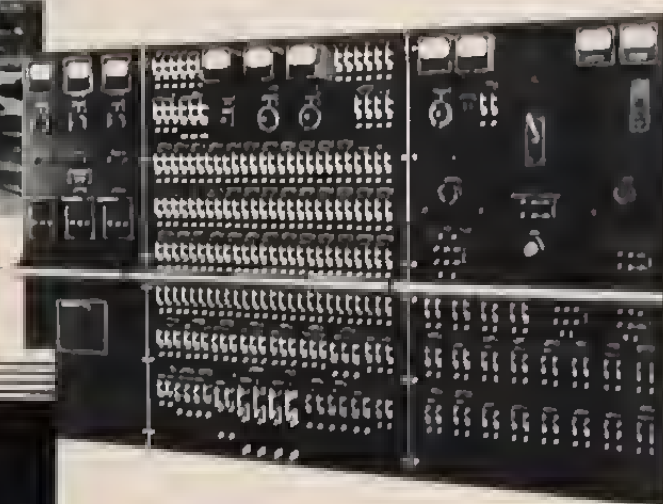
- 135 DESTROYERS
- 5 BATTLESHIPS
- 16 AIRCRAFT CARRIERS
- 27 CRUISERS
- 20 MINE SWEEPERS
- 322 DESTROYER ESCORTS
- 6 SALVAGE VESSELS
- 12 SUBMARINE CHASERS
- 2 SEAPLANE TENDERS
- 9 DESTROYER TENDERS

Generator and Feeder Distribution Switch Boards
I.C., F.C., and A.C.O. Switch Boards
Battery Charging Switch Boards
I.C. Test Panels
General Work Test Panels
Distribution Panels in Watertight or Non-watertight Cabinets
Terminal Connection Boxes
Shore Connection Boxes
Degaussing Control and Distribution Panels
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ST. KILDA, SCALPAY, SKYE, STAFFA, STROMA, SWITHA, UIST, WALLASEA, WESTRAY, WHALSAY and others (all 1939 or later). About 450 tons gross. 1 4" AA, several smaller. No other details.

Dance Class: COTILLION, COVERLEY, FANDANGO, FOX-TROT, GAVOTTE, HORN-PIPE, MAZURKA, MINUET, MORRIS DANCE, PIROUETTE, POLKA, QUADRILLE, RUMBA, SALTARELLO, SARABANDE, SWORD DANCE, TANGO, TWO-STEP (ex-Tarantella), VALSE, VELETA (all 1939 or later). 1 4" AA, several smaller. Modifications of Basset-Bay types. No other details.

Butser Class: BUTSER, DUNKERRY, INKPEN, YES TOR and others (all 1939 or later). No data available.

Fish Class: BONITO, GRAYLING, MACKEREL, WHITING and others (all 1939 or later). No details released.

Knight Class: SIR AGRAVAINE, SIR GALAHAD, SIR GARETH, SIR GERAINT, SIR LAMORAK, SIR LANCELOT, SIR TRISTRAM and others (all 1939 or later). No particulars announced.

Shakespearean Class: CELIA, CORIOLANUS, FLUELLEN, HAMLET, JULIET, MACBETH, OPHELIA, OTHELLO, ROMEO, ROSALIND (all 1939 or later). No data released.

Bay Class: BAY, HAZEL, WHITETHORN, WISTARIA (all 1939); DEODAR, MANGROVE, OLIVE (all 1940); ACACIA, BIRCH, BLACKTHORN, ELM, FIR, PINE, ROWAN, WALNUT (launch dates unreported). All ordered on eve of war. Standard Displacement: about 600 tons. 1 4" AA, several smaller. Reciprocating engines. No other data available, but appear to be enlarged Bassets.

BASSET (1935). Standard Displacement: 461 tons. 160' 6" x 27' 6" x 10' 6". Reciprocating engines, 850 HP. 12 kts. 1 4" AA, possibly several smaller. Original of most modern British naval trawler types. Designed by Henry Robb, Ltd., Leith, Scotland.

Commercial Trawlers Taken Over Since War: (list contains 87 names; 67 trawlers were taken over in 1939; many more requisitioned since): ALAFOSS (1929, 358 tons gross); ARCTIC EXPLORER, ARCTIC RANGER (both 1937, 501); ARSENAL (1933, 398); ATHENIAN (1919, 218); AYRSHIRE (1938, 540); BANDOLERO (1935, 440); BARNETT (1937, 482); BEN MEIDIE (1917, 234); BLACKFLY (ex-Matabele, 1935, 440); BRONTES (1934, 424); CAMBRIDGESHIRE (1935, 443); CANADIAN PRINCE (1937, 455); CAPE ARGONA (1936, 494); CAPE COMORIN (1936, 504); CAPE PALLISER (1936, 495); CAYTON WYKE (1932, 373); CLIFTON (1915, 194); COMPTON (ex-Fighter, 1937, 516); CORDELA (1930, 355); CORENA (1924, 352); DALMATIA (1928, 357); DANEMAN (1937, 516); DARTHEMA (1929, 373); DAVY (1936, 449); DERBY COUNTY (1933, 399); DRANGEY (1935, 434); DUNCTON, EDWARDIAN (both 1938, 341); GAROLA (1912, 249); GENERAL BIRDWOOD (1919, 324); GREENFLY (ex-Quantock, 1936, 441); HAMPSHIRE (1934, 425); HUDDERSFIELD TOWN (1933, 399); HUGH WALPOLE (1937, 498); ISTRIA (1933, 409); KELT (1937, 455); KINGSTON AGATE (1937, 464); KINGSTON AMBER (1937, 467); KINGSTON ANDALUSITE (1934, 415); KINGSTON CHRYSOLITE (1935, 448); KINGSTON OLIVINE (1930, 378); KINGSTON ONYX, KINGSTON TOPAZE (both 1927, 357); KIRKELLA (1936, 436); LADY BERYL (1935, 417); LADY ELSA (ex-Italia Caesar, 1937, 518); LADY PHILOMENA (1936, 417); LEEDS UNITED (1933, 398); LEYLAND (1936, 452); LOCH MELFORT (1934, 440); LOCH TULLA (1934, 423); LORD HOTHAM (1936, 464); LORD LLOYD, LORD PLENDER (both 1933, 396); LORD WAKEFIELD (1933, 418); MAN O' WAR (1937, 516); MARJORIE M. HASTIE (1930, 244); MILDENHALL (1936, 466); NEGRO (1932, 402); NORTHERN DAWN, NORTHERN GEM, NORTHERN PRIDE, NORTHERN SKY, NORTHERN SPRAY, NORTHERN WAVE (all six, 1936, 655); ORIENTAL STAR (1934, 427); PETER CAREY (1919, 280); PICT (1936, 462); REGAL (1933, 409); RIFONIA; ST. AMANDUS (1933, 400); ST. ANDRONICUS (1933, 399); ST. ARCADIVS (1933, 403); ST. ATTALUS (1934, 399); SAON (1933, 386); SPURS (1933, 399); STAFNES (1936, 454); STELLA LEONIS (1928, 345); THORNWICK BAY (1936, 437); TURCOMAN (1937, 455); VASCAMA (1935, 447); VICTORIAN (1935, 440); WELLARD (ex-El Capitan, 1937, 514); WITHERNSEA (1918, 257); YORK CITY (1933, 398). Names of some of these ships may have been changed on acquisition, though no new names have been reported. Typical specifications: 175' x 28' x 12'-13'. Reciprocating engines, about 1,000 HP. 12.5 kts. 1 3" or 4" AA; possibly some smaller. (Note: tons in this paragraph are gross tons).

Commercial Trawlers Purchased 1935-39 for Anti-Submarine Duties: AGATE (ex-Mavis Rose, 1934, 627 tons displacement); AMBER (ex-Cape Barfleur, 1934, 700); BERYL (ex-Lady Adelaide, 1935, 615); CORAL (ex-Cape Duner, 1935, 700); CORNELIAN (ex-Cape Warwick, 1933, 568); GUAVA (ex-British Columbia, 1935, 134 tons gross); JADE (ex-Lady Lillian, 1933, 615 tons displacement); MOONSTONE (ex-Lady Madeleine, 1934, 615); PEARL (ex-Dervish, 1934, 649); RUBY (ex-Cape Bathurst, 1933, 568); SAPPHIRE (ex-Mildenhall, 1935, 608); TOPAZE (ex-Melbourne, 1935, 608); TURQUOISE (ex-Warwickshire, 1935, 641).

Guava tonnage in gross tons; others, displacement tons. Guava, diesel-powered; others, reciprocating engines. Armament of all: 1 4" AA and depth charges.

Commercial Trawlers Purchased 1935-39 for Minesweeping: ALDER (ex-Lord Davidson, 1929, 560 tons displacement); BEECH (ex-Lord Dawson, 1929, 540); BERBERIS (ex-Lord Hewart, 1928, 540); CEDAR (ex-Arab, 1933, 649); CYPRESS (ex-Cape Finisterre, 1930, 548); HAWTHORN (ex-Cape Guardafui, 1930, 593); HORNBEAM (ex-Lord Trent, 1929, 530); HOLLY (ex-Kingston Coral, 1930, 590); LARCH (ex-St. Alexandro, 1928, 550); LAUREL (ex-Kingston Cyanite, 1930, 590); LILAC (ex-Beachflower, 1930, 593); MAGNOLIA (ex-Lord Brentford, 1930, 557); MAPLE (ex-St. Gerontius, 1929, 550); OAK (ex-St. Romanus, 1928, 545); REDWOOD (ex-St. Rose, 1928, 540); SYCAMORE (ex-Lord Beaverbrook, 1930, 573); SYRINGA (ex-Cape Kanin), WILLOW (ex-Cape Spartiventa) (both 1930, 574). (All tonnages in this paragraph are displacement tons). 1 4", 1 depth charge and sweeping gear.

Mersey Type: BLACKWATER (ex-William Inwood); BOYNE (ex-William Janes); COLNE (ex-Isaac Chant); DOON (ex-Fraser Evans); EDEN (ex-Immortelle, ex-Eden, ex-Thomas Jahns); EXCELLENT (ex-Nith, ex-Andrew Jewer); FOYLE (ex-Sonneblam, ex-Foyle, ex-John Edmund); MOY (ex-Alexander Hills); PEMBROKE (ex-Stour, ex-Daniel Fearall) (all 1917-18). Commercial-type trawlers taken over during last war. Some used on fishery patrol in peacetime. Displacement varies from 450 to 550 tons. Armament 1 3" AA or 2 3" AA or 2 3-pounders.

Ex-Russian Type: DEE (ex-T-16, ex-Battleaxe, 393 tons displacement); GARRY (ex-T-13, ex-Goldaxe, 417); KENNET (ex-T-17, ex-Iceaxe, 407); LIFFEY (ex-T-14, ex-Stoneaxe, 373) (all 1916). Armament unreported.

OVER 32 DRIFTERS

BRINE, CASCADE, CLOUD, COLD SNAP, CRESCENT MOON (all 199 tons); E8BTIDE (ex-C.D. 1, 150 tons); EDDY, FUMAROLE, HALO, HARMATTAN, HORIZON, INDIAN SUMMER, LANDFALL, LEEWARD, LUNAR 80W, MIST, NOONTIDE (all 199 tons); ONYX (ex-C.D. 82, 150 tons); RALEIGH (ex-Glitter), SEABREEZE, SHEEN, SHOWER, SUNDOWN, SUNSET (all 199 tons); UNICITY (96 tons gross); WHIRLPOOL (199 tons); FIDGET, FISHER 80Y, JACKETA, LORD CAVAN, SILVER DAWN, VICTORIA 1 (tonnages unreported).

Drifters are small fishing vessels used for a variety of patrol duties.

COASTAL MOTOR LAUNCHES

The British navy has in commission a great number of motor launches (other than motor torpedo and motor gun boats), used for a variety of coastal purposes. Numbers announced include: M.L. 100-104, 106, 110, 113-120, 131, 133, 136-139, 142, 143, 145-148, 150-153, 212, 250, 255 and 290.

SEA-GOING NETLAYERS

PROTECTOR (1936). Built by Yarrow. Displacement: 2,900 tons. Dimensions: 338' x 50' x 11' 6". Propulsion: Geared turbines, 9,000 SHP. Speed: 20 kts. Armament: 1 4" AA, 1 multi-MG.

GUARDIAN (1932). Built at Chatham Dockyard. Displacement: 2,860 tons. Dimensions: 310' x 53' x 11' 3". Propulsion: Geared turbines, 6,500 HP. Speed: 18 kts. Armament: 2 4" AA, 1 multi-MG.

The *Protector* and *Guardian* are unusual ships, sea-going netlayers whose purpose is to lay protective net barrages about ships at sea, in contrast to the boom defense vessels or netlayers which lay nets at harbor mouths. They carry equipment for salvaging the nets when their usefulness is at an end. Open sea netlaying is an arduous task. In addition, the *Guardian* carries equipment for fleet photography work.

71 BOOM DEFENSE VESSELS

Bayonet Class: BAYONET (ex-Barnehurst), FALCONET (ex-Barnham), MAGNET (ex-Barnsley), MARTINET (ex-Barnstane), PLANET (ex-Barnwell), all 1938; BOWNET, BURGONET, DRAGONET, PLANTAGENET, SIGNET, SONNET, all 1939. 530 tons. 135' x 30' 6" x 9', 11.5 kts., 1 3" AA. DUNNET (1936). 385 tons, 134' 3" x 26' 6" x 9', 10 kts., 1 3".

Barbarian Class: BARBARIAN, BARBETTE, BARRAGE, all 1937; BARBICAN, BARBROOK, BARCASTLE, BARCOMBE, BARFAIR, BARFIELD, BARLANE, BARLIGHT, BARLOW, BAR, MOUTH, BARRANCA, BARRICADE (ex-Ebgate), BARRIER (ex-Bargate), all 1938; BARNDALE,

1939; BARNWELL, all 1940; BARFOSS, 1942; BARBOUR, BARCROFT, BARCROSS, BARNEHURST, BARNSTONE and at least 28 others (launch dates unreported). 730 tons, 173' 9" x 32' 3" x 9' 6", 11.75 kts., 1 3" AA.

JENNET (ex-Bunsen, 1926), 35B tons; PUNNET (ex-Cape Matapan, 1925), 321; QUANNET (ex-Dairycoates, 1926), 350; RENNET (ex-Deepdale Wyke, 192B), 335. Tonnage for this group is gross. Dimensions: 140' 3" x 24' x 12'. BARNET (ex-Earl Haig, 1919). 423 tons, 138' 4" x 23' 9" x 11' 3", 11 kts., 1 3".

CORONET (ex-Robert Cloughton, 1917). 429 tons, 125' p.p. x 22' 6" x 12' 6", 10.5 kts., 1 3".

FASTNET (ex-Frobisher, 1919). 444 tons, 147' 9" x 23' 9", 11 kts., 1 3".

ROYAL YACHT

VICTORIA AND ALBERT (1899). Displacement: 4,700 tons. 380' p.p. x 40' x 1B'. Propulsion: Two screws, two sets coal-fired reciprocating engines, 11,800 HP. 20 kts. Carries two bronze 6-pounders in peacetime for saluting purposes. Rearmed since 1939 and used as a gunnery training vessel.

11 TENDERS AND REPAIR SHIPS

Photo Page 139

A new tender for motor torpedo boats was to have been built under the 1939 program.

ADAMANT (1940). Submarine tender. 12,500 tons, geared turbines, 17 kts., B 4.5", 2 multiple pompoms.

ALECTO (1911). Submarine tender. 935 tons, 14 kts., no guns.

CYCLOPS (ex-Indrabarah, 1905). Submarine tender. 11,300 tons, 13 kts., 2 4".

FORTH (1938). Submarine tender. B,900 tons, geared turbines, 17 kts., B 4.5" in pairs—2 forward, 2 aft and 2 sponsoned on each beam—2 multiple pompoms, 4 3 pdr., 4 smaller.

GREENWICH (1915). Destroyer tender. 8,100 tons, 11 kts., 4 4", 1 3" AA.

LUCIA (ex-German Spreewald, converted 1916). Destroyer tender. 5,800 tons, 12.7 kts., 2 3 pdr. AA.

MAIDSTONE (1937). Submarine tender. B,900 tons, geared turbines, 17 kts., gun arrangement as in Forth.

RESOURCE (1928). Fleet repair ship. 12,300 tons, 15 kts., 4 4" AA, 4 smaller.

TITANIA (1915). Submarine tender. 5,250 tons, 14.5 kts.

TYNE (1940). Destroyer tender. 11,000 tons, 17 kts., B 4.5", 2 multiple pompoms.

WOOLWICH (1934). Destroyer tender. B,750 tons, 15 kts., 4 4" AA, 10 smaller.

HOSPITAL SHIPS

In addition to the vessels named below, a great many passenger ships have been taken over and employed as hospital ships. *Newfoundland*, ex-passenger liner serving as hospital vessel, was sunk in deliberate attack by German divebombers (ship was well lighted at the time, in accordance with international law) during Sicilian landing operation, 1943. *St. David*, another British hospital ship, was sunk off the Anzio beachhead January, 1944.

LEINSTER. Ex-passenger liner. Damaged by German air attack off Anzio beachhead, January, 1944.

MAINE (ex-Panama, 1902). 10,100 tons, 13 kts.

ST. ANDREW. Ex-passenger liner. Damaged by German air attack off Anzio beachhead, January, 1944.

TJITJALENGKA (1939). 16,800 tons, Diesel, 15 kts.

OVER 58 OILERS

All British oilers are now armed, details unreported.

CAIRNDALE (ex-Erato, 193B), CEDARDALE (1939). 17,210 tons, 11.5 kts., 12,000-ton capacity.

ABBEYDALE (1936), ALDERSDALE, ARNDALE, BISHOPDALE, BOARDALE, BROOMDALE (all 1937). All slightly over 17,000 tons, 11.5 kts., 11,650-ton capacity.

OLNA (1921), OLEANDER (1922). Over 15,000 tons, 11 kts., 10,000-ton capacity.

WAR BAHADUR, WAR NIZAM (191B); WAR DIWAN, WAR HINDOO, WAR KRISHNA, WAR NAWAB, WAR PATHAN (1919); WAR AFRIDI, WAR BHARATA, WAR BRAHMIN, WAR MEHTAR, WAR PINDARI, WAR SIRDAR, WAR SUDRA (1920). 11,660 to 11,681 tons, 10 kts., capacity from 6,300 to 8,100 tons.

OLYNTHUS (ex-British Star, 1917), OLCADDES (ex-British Beacon), OLIGARCH (ex-British Lantern)—both 191B. About 15,000 tons, 11 kts., 9,000-ton capacity.

OLWEN (ex-British Light, 1917). 13,690 tons, 10 kts., 8,000-ton capacity.

APPLELEAF (ex-Texon), BRAMBLELEAF, CHERRYLEAF, ORANGELEAF, PEARLEAF, PLUMLEAF (ex-Trino)—all 1917. About 12,300 tons, 14 kts., capacity about 5,000 tons.

BELGOL, CELEROL, FORTOL, FRANCOL, MONTENOL, PRESTOL, RAPIDOL, SERBOL, SLAVOL (all 1917). Displacements vary from 5,049 to 5,620 tons, 14 kts., capacity 2,000 tons.

BIRCHOL, BOXOL, EBONOL, ELDEROL, ELMOL, HICKOROL, LARCHOL, LIMOL (all 1917). Displacement about 2,400 tons, 9 kts., capacity 1,000 tons.

MIXOL, THERMOL (1916). 4,326 tons, 11 kts., 2,000-ton capacity.

DISTOL, KIMMEROL, PHILOL, SCOTOL, VISCOL (all 1916). Displacements from 2,200 to 2,400 tons, 9 kts., 1,000-ton capacity.

4 GASOLINE TANKERS

NASPRITE (1940), AIRSPRITE (1942). 965 tons gross, 11 kts.

PETRELLA, PETROBUS (1918). Sister ships, 1,024 tons, 9.5 kts.

WATER TANKERS

In addition to the PETRONEL (launched 1918 and sister to gasoline tankers *Petrella* and *Petrobus*), an unstated number of water carriers—possibly converted oilers—were commissioned for use during the Libyan campaign.

4 STORESHIPS

ROBERT DUNDAS, ROBERT MIDDLETON (both 193B). 900 tons, 10.5 kts.

BACCHUS (1936). 5,150 tons, 12 kts.

RELIANT (ex-London Importer, 1923). 17,000 tons, 14 kts.

RESCUE TUGS

In 1942 and 1943, 27 rescue tugs, a new type of vessel, were ordered by the U. S. Navy for the British Navy under lend-lease. No particulars have been released, beyond the fact that the vessels are designated ATR by the U. S. Navy, and BAT by Great Britain.

FLEET TUGS

SAMSONIA and others. Tugs of a new and larger design than others in Royal Navy service. No data available.

Brigand Class: BRIGAND (1937), BUCCANEER (1937), BANDIT (1938), MARAUDER (193B), FREEBOOTER (1939). Displacement: B40 tons. 174' x 32' x 10' B". Two screws, reciprocating engines, 3,000 HP. 16 kts. 1 3" AA. Fitted for target towing and salvage work as well as normal duties.

Rollicker Class: RESOLVE, RESPOND, RETORT, ROLLICKER, ROYSTERER (191B-19). Displacement: 1,400 tons. 175' x 34' x 17' max. Two screws, reciprocating engines, 2,400 HP. 14 kts. Ordinarily used on harbor service. Now armed.

Saint Class: ST. ABBS, ST. BLAZEY, ST. BREOCK, ST. CLEARS, ST. CYRUS, ST. DAY, ST. DOGMAEL, ST. ISSEY, ST. JUST, ST. MARTIN, ST. MELLONS, ST. MONANCE, ST. OMAR.

(1918-19). Displacement: 820 tons. 135' 6" x 29' x 14' 6" max. Coal-fired, single screw, reciprocating engine, 1,250 HP. 12 kts. Now armed. *St. Cyrus*, *St. Issey*, *St. Just*, *St. Mortin* employed as target towers, others mostly on harbor service up to outbreak of war. *Toio* (ex-*St. Bonifacio*) and *Ocean Eagle* (ex-*St. Armand*) of New Zealand and Canadian navies are of this type. Others of same type are to be found in many other navies as well as in commercial service, sold by British navy after the last war.

MISCELLANEOUS AUXILIARIES

BLOODHOUND (1936). Torpedo school utility craft. 35 tons, 25 kts., 1 21" TT (carrying 3 torpedoes).

CHALLENGER (1931). Surveying vessel. 1,140 tons, 12.5 kts.

DWARF (1936). Submarine headquarters utility craft. 172 tons, 9.25 kts., no guns.

ELFIN (1933). Submarine depot utility craft. 222 tons, 9.5 kts.

ENDEAVOR (1912). Surveying vessel. 1,280 tons, 13 kts., 1 3 pdr., 1 MG.

KILMUN (1919). Cable vessel. 890 tons, 10 kts., no guns.

LASSO (1938). Cable vessel. 903 tons, 13 kts., no guns.

NIGHTINGALE (1931). Mine-laying trainer. 298 tons, 10 kts., no guns.

REDWING (1933). Torpedo school utility craft. 225 tons, 9.5 kts.

VERNON (ex-*Skyloark*, 1932). Mine-laying trainer. 302 tons, 10 kts., no guns.

VULCAN (ex-*Mascot*, ex-*Aston Villa*, 1933). Coastal motor launch tender. 623 tons, 11.5 kts.

GREAT BRITAIN - AIRCRAFT CARRIERS

3 Implacable Class

Photo Page 117

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------|-----------------|-----------|----------|-------|
| IMPLACABLE | Fairfield | 2/39 | 1941 | 1942 |
| INDEFATIGABLE | Clydebank | 1939 | 1941 | 1942 |
| INDOMITABLE | Vickers, Barrow | 11/10/37 | 11/39 | 1940 |

Standard Displacement: 23,000 tons.

Dimensions: 760' x 95' 9" x 22' 4".

Propulsion: Three screws, three sets geared turbines, 140,000 SHP. Speed: 32 kts.

Plane capacity unreported. Armament: 16 4.5" DP in twin gunhouses; numerous smaller AA, probably including Bofors 40 mm and Oerlikon 20 mm AC. Armor unreported.

The *Implacable* and *Indefatigable*, which have been in action although no reports of missions they have participated in have been published, are longer, beamier and shallower editions of the *Illustrious* class, with considerably more powerful engines and a knot more speed.

3 Illustrious Class

Photo Pages 117, 118

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------|-----------------|-----------|----------|-------|
| ILLUSTRIOUS | Vickers, Barrow | 4/27/37 | 4/ 5/39 | 1940 |
| VICTORIOUS | Vickers, Tyne | 5/ 4/37 | 9/14/39 | 1940 |
| FORMIDABLE | Harland & Wolff | 6/17/37 | 8/17/39 | 1940 |

Standard Displacement: 23,000 tons.

Dimensions: 753' x 95' x 24'.

Propulsion: Three screws, three sets geared turbines, 110,000 SHP. Speed: 31 kts.

Plane capacity unreported. Armament: 16 4.5" DP in twin turrets; numerous smaller AA, probably including Bofors 40 mm and Oerlikon 20 mm AC. Armor unreported.

The *Illustrious* and her sisters have certainly had as hectic a history as any group of vessels now in existence. In 1940, planes from the *Illustrious* dealt the Italian fleet a blow at Taranto from which it never recovered; and on Jan. 10, 1941, she herself was very nearly sent to the bottom by a continuous six-hour attack of Ju 87s. Somehow, she managed to survive. (One of her consorts, the cruiser *Southampton*, was sunk.) After temporary repairs had been made, she came to the U. S., where she was all but rebuilt. The torpedo planes that hit the *Bismarck* were from the *Victorious*; those that hit the *Vittorio Veneto* in the Battle of Cape Matapan were from the *Formidable*. *Victorious* spent a year, 1942-3, with the U. S. fleet in the Southwest Pacific.

1 Argus Class

Photo Page 119

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------------------------|-----------|-----------|----------|-------|
| ARGUS (ex- <i>Conte Rosso</i>) | Beardmore | 1914 | 12/ 2/17 | 9/18 |

Standard Displacement: 14,000 tons.

Dimensions: 565' x 68' x 21'.

Propulsion: Four screws, four sets geared turbines, 20,000 SHP. Speed: 20 kts.

Plane capacity: Unreported. Armament: Several medium and small caliber AA. Armor: None, but fitted with anti-torpedo bulges.

The *Argus* is the world's first aircraft carrier. She was begun in 1914 as the *S. S. Conte Rosso* for the Italian Lloyd Sabaudo steamship line. Work on her was suspended at the outbreak of World War I and the hull lay idle for two years. In 1916, however, it was requisitioned for completion as an aircraft carrier. For many years between the wars, *Argus* was rated only as an auxiliary, used for training and as the mothership of radio-controlled Queen Bee and Queen Wasp planes (on which British AA gunners sharpened their eyes). Since 1939, however, she has been rearmed and is once more in use as a combatant vessel, although actually she is too slow to join the fleet in operations and is in reality hardly more than an oversized escort carrier. Her nearest equivalents are the large Japanese carriers converted from high speed passenger liners.

1 Furious Class

Photo Page 119

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|---------------------|-----------|----------|-------|
| FURIOUS | Armstrong-Whitworth | 6/15 | 8/15/16 | 7/17 |


Standard Displacement: 22,450 tons.

Dimensions: 786' 3" x 89' 9" x 21' 8".

Propulsion: Four screws, four sets geared turbines, 90,000 SHP. Speed: 31 kts.

Plane capacity: As of 1939, 33. Armament: 12 4.5" DP in twin turrets; numerous smaller, probably including Bofors 40 mm and Oerlikon 20 mm AC AA. Main armament possibly increased since 1940. Armor: 3" belt; decks, 1"-3".

The *Furious* has probably undergone more alteration than any other vessel extant. Begun as a battle cruiser, she was converted when well toward completion. Rebuilt in 1917-18, again in 1921-5 and once more in 1939, it is possible that she has been altered since. After the 1939 refit, her flight deck (which never came all the way forward) measured 700' x 80'. It is possible that it has been lengthened. As a battle cruiser, the *Furious* was to have mounted 18" guns (such guns were tested in Britain and the U. S. during the last war, but abandoned as the added weight and slowness of fire cancelled the advantage of a truly stupendous projectile).



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GREAT BRITAIN - AIRCRAFT CARRIERS—ESCORT TYPE

Most British escort carriers are American-built and acquired by lend-lease, and accordingly follow American vessels in classification. The only acknowledged exceptions are the *Unicorn* and the *Audacity*, one of two escort carriers whose loss has been admitted by the Admiralty. The *Audacity*, sunk in the North Atlantic in December, 1941, is a captured German vessel, the *Hannover*, of 5,537 tons gross and built in 1938, which was converted into an auxiliary carrier for the Royal Navy.

Class Uncertain

ATTACKER, BITER, STALKER. *Attacker* and *Stalker* were two of five British carriers stated by the Admiralty to have taken part in the Allied landing at Salerno. Their *Seafires* were among the squadrons of fighters which cleared the Luftwaffe from the skies of southern Italy while the Anglo-American Fifth Army went ashore. They are American-built, probably of the *Glacier* or *Alazan Bay* type, although they may belong to earlier classes.

FENCER. Planes that shot down a Focke-Wulf 200 long-range bomber early in 1943 were identified as from an *H.M.S. Fencer*.

Modified Glacier Class

The British navy includes or will soon include a number of escort carriers of the modified *Glacier* type built by the Seattle-Tacoma Shipbuilding Corp. No names as yet announced, however.

Ameer Class

AMEER (4/19/43), **NATOMA** (7/19/43) and many others, built by Oregon Shipbuilding Corp. identical with *Alazan Bay* class of U. S. Navy.

Glacier Class

Although no names clearly identifiable as such have been announced, a great many U. S.-built escort carriers of the *Glacier* class are at sea under the Union Jack. Armament and other details as American vessels.

6 or more Battler Class

Photo Page 119

BATTLER (4/4/42), **HUNTER**, **PURSUER**, **RAVAGER** (7/16/42), **SEARCHER** (6/18/42), **TRACKER** (3/7/42) and possibly others. First three built by Ingalls Shipbuilding, last three by Seattle-Tacoma Shipbuilding. Propulsion: Single screw, geared turbines in *Battler* and *Hunter*, Diesels in others, 8,500 HP. Other particulars identical to the U. S. *Copahee* type.

The *Battlers* are also American-built escort carriers and are based on the U. S. Maritime Commission C-3 cargo-and-passenger design. Like the *Copahees*, the *Battlers* were converted to escort carriers after construction of the hulls had begun, but in most cases before launching, or at least before completion. A fourth Ingalls-built *Battler*, *Charger*, after serving in the Royal Navy for about a year, is now back under the American flag. The *Avenger*, the ex-*Rio Hudson*, lost off Algeria in November, 1942 during Allied landing operations, was a converted U. S. C-3 of the *Battler* type.

U. S. Long Island Type

One or more vessels of the U. S. Long Island class, the first American auxiliary carriers, may have been lend-leased to Britain. S.S. *Mormacland* is reported to have been converted to a carrier of this type for the Royal Navy.

1 Unicorn Class

UNICORN (Harland & Wolff, Belfast, 1940). Standard Displacement: 14,500 tons. Dimensions: 564' x 90' x 19'. Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 22 kts. Plane capacity unreported. Armament: 8 4.5" DP; 2 multiple pom-pom; possibly other AA.

The *Unicorn* is rated on the last published British navy list as an aircraft supply and depot ship (nearest U. S. equivalent: seaplane tender). However, in making a false claim as to her sinking, the Germans in 1942 reported her to be an aircraft carrier, a fact which Britain confirmed by announcing that the *Unicorn* was one of five British escort carriers taking part in the Salerno landing of the Allied Fifth Army. The *Unicorn* was evidently begun as a plane tender and converted after launching (possibly after first completion) to her present form. Although her displacement and draft are less than contemporary American escort carriers, the *Unicorn* is larger in length and beam. Hence her plane capacity may be a little greater: as many, perhaps, as 36 fighters.

SEAPLANE CARRIER

ALBATROSS (built at Sydney, Australia, 1927). Standard Displacement: 4,800 tons. Dimensions: 443' 9" x 58' x 13' 9". Propulsion: Two screws, two sets geared turbines, 12,000 SHP. Speed: 21 kts. Armament: 4 4.7" AA; 32 smaller. Plane capacity: 9 seaplanes. Catapults: 1.

The *Albatross* was built for the Australian navy, which transferred her to Great Britain in 1938. She is now probably used as a tender rather than as a carrier.

EXPERIMENTAL VESSEL

PEGASUS (ex-*Ark Royal*, 1914). Standard Displacement: 6,900 tons. Dimensions: 366' x 50' 10" x 17' 6". Propulsion: Reciprocating engines, 3,000 HP. Speed: 11 kts. Armament: Numerous MG.

The *Pegasus*, the *Ark Royal* until the building of the late aircraft carrier of that name, was first used as a seaplane carrier, but most recently has been employed for experiments with catapults and seaplane landing rafts.

Sometime during 1944 the Royal Canadian Navy is to man two light cruisers and possibly two escort aircraft carriers (of American construction, probably) of the Royal Navy. These will be turned over to Canada later in part payment for over a billion dollars of Canadian lend-lease to Great Britain.

CANADA - DESTROYERS

8 Modified Tribal Class

ATHABASCAN, **IROQUOIS** (both 1941); **HAIDA**, **HURON** (both 1942); **MICMAC** (1943) and three others, laid down at Halifax in 1942-3. Standard Displacement: About 1,900 tons. Dimensions: 355' 6" x 37' 6" x 9'. Propulsion: Two screws, two sets geared turbines, 44,000 SHP. Speed: 36.5 kts. Armament: 6 4.7" twin behind shields; 2 4" AA in twin mount; 7 smaller, AA; 4 21" TT in quadruple mount; DCTs.

The *Athabaskan* and her sisters, the largest warships yet built in Canadian yards, are one-foot beamier editions of the British *Tribal* class design.

1 Assiniboine Class

ASSINIBOINE (ex-*Kempentfelt*, 1931). Standard Displacement: 1,390 tons. Dimensions: 326' w.l. x 33' x 8' 8". Propulsion: Two screws, two sets geared turbines, 36,000 SHP. Speed: 35.75 kts. Armament: 4 4.7"; six (possibly more now) smaller, AA; 8 21" TT in quadruple mounts (possibly now reduced to four TT); DCTs.

The *Assiniboine* is a former Royal Navy flotilla leader, transferred to Canada in October, 1939.

2 St. Laurent Class

Photo Page 145

RESTIGOUCHE (ex-*Comet*), **ST. LAURENT** (ex-*Cygnat*) (both 1931). Standard Displacement: 1,375 tons. Dimensions: 326' w.l. x 33' x 8' 6". Propulsion: Geared turbines, 36,000 SHP. Speed: 36 kts. Armament: 3 4.7"; 1 4" AA; 7 smaller, AA; 4 21" TT in quadruple mount; DCTs.

The *St. Laurent* and *Restigouche* are the sole survivors of five C- and D-class British destroyers acquired by Canada from the Royal Navy in 1937 and 1938. The others, all war losses, are the *Fraser* (ex-*Crescent*), *Margaree* (ex-*Diana*) and *Ottawa* (ex-*Crusader*).

2 Skeena Class

Photo Page 144

SAGUENAY, SKEENA (both 1930). Standard Displacement: 1,337 tons. Dimensions: 321' 2" x 32' B" x 10' 6". Propulsion: Geared turbines, 32,000 SHP. Speed: 35 kts. Armament: 3 4.7"; 1 4" AA; 7 smaller, AA; 4 21" TT in quadruple mount; DCTs.

The *Saguenay* and *Skeena*, built in England to Canadian order, are replicas of the Royal Navy's Active class vessels, strengthened for navigation in ice.

1 St. Francis Class

ST. FRANCIS (ex-*Bancroft*, 1919). Standard Displacement: 1,190 tons. Dimensions: 314' 4" x 30' B" x 9' 3". Propulsion: Two screws, two sets geared turbines, 27,000 SHP. Speed: 35 kts. Armament: 4 4"; 2 MG AA (probably increased since war); 16 21" TT in quadruple mounts (some, possibly all, now removed); DCTs.

The *St. Francis* is a former U. S. World War flush-decker transferred to Great Britain in the destroyers-for-bases deal and subsequently re-transferred by Britain to Canada. Canada also received the *St. Croix* (ex-*McCook*) of the same 1B6-347 class of flush deckers, but the *St. Croix* has been lost.

5 Annapolis Class

ANNAPOLIS (ex-*Mackenzie*), HAMILTON (ex-*Kalk*, ex-*Rodgers*), NIAGARA (ex-*Thatcher*), ST. CLAIR (ex-*Williams*) (all 1918); COLUMBIA (ex-*Harnden*, 1919). Standard Displacement: 1,060 tons. Dimensions: 314' 4" x 30' 6" x B' 6". Propulsion: Two screws, two sets geared turbines, 25,000 SHP. Speed: 35 kts. Armament: 4 4"; 2 MG AA (probably increased since war); 16 21" TT in quadruple mounts (some, possibly all, now removed); DCTs.

The Annapolises are former U. S. World War flush-deckers acquired by Canada via the Royal Navy. They are of the earlier (75-1B5) flush-decker type. All but the Hamiltons were transferred to Canada in 1940; the *Hamilton*, which has only three stacks in contrast to the usual four of this type, served in the Royal Navy for a year before hoisting the maple leaf pennant.

CANADA - ANTI-SUBMARINE

Over 9 Frigates

BAZELY, DUNVER, CAPE BRETON, MATANE, MONTREAL, PORT COLBURNE, ST. CATHERINES, SWANSEA, WENTWORTH and others. No particulars released, but similar to British and American vessels of same classification.

Canada has built a large number of frigates (many more than are listed) not only for herself, but for the British and American navies as well.

Over 78 Flower Type Corvettes

Photo Page 145

CHAMBLY (1940); AGASSIZ, BRANTFORD, FORT YORK, KITCHENER, LA MALBAIE, MOOSE JAW, NAPANEE, OAKVILLE, SACKVILLE, SUDBURY, VANCOUVER (all 1941); BARRIE, FENNEL, HEPATICA, NADUR, WASKESIU (all 1942); ALBERNI, ALGOMA, AMHERST, ARROWHEAD, ARVIDA, BADDECK, BATTLEFORD, BITTERSWEET, BRANDON, BRONTE, BUCTOUCHE, CALGARY, CAMROSE, CHICOUTIMI, CHILLIWACK, COBALT, COLLINGWOOD, DAUPHIN, DAWSON, DRUMHELLER, DUNDAS, DUNVEGAN, EDMUNSTON, EYEBRIGHT, FREDERICTON, GALT, HALIFAX, KAMLOOPS, KAMSACK, KENOGLAMI, LETHBRIDGE, LUNENBURG, MATAPEDIA, MAYFLOWER, MIDLAND, MONCTON, MORDEN, NANAIMO, NEW WESTMINSTER, ORILLIA, PAS, PICTOU, PORT ARTHUR, PRESCOTT, QUESNEL, REGINA, RIMOUSKI, ROSTHERN, SASKATOON, SHAWINIGAN, SHEDIAC, SHERBROOKE, SNOWBERRY, SOREL, SUMMERSIDE, TIMMINS, TRAIL, TRILLIUM, VILLE DE QUEBEC, WETASKIWIN, WOODSTOCK and others (launch dates unreported). Standard Displacement: 925 tons (later units heavier). Dimensions: 193' x 32' x 16'. Propulsion: Single screw, reciprocating engine. Speed: 17 kts. Armament: 1 4" AA; 1 pompom AA; MGs; DCT.

In addition to the above, Canada has built a great many corvettes for the British as well as her own navy, and a number have also been launched for the Indian navy. Eight of the above (*Arrowhead*, *Bittersweet*, *Eyebright*, *Fennel*, *Hepatica*, *Mayflower*, *Snowberry* and *Trillium*) were originally built for the Royal Navy, but transferred to Canada before completion. Corvettes built expressly for the Canadian navy are named after Canadian cities. Besides two British-owned corvettes on loan to Canada at the time of their loss (*Spikenard* and *Windflower*), the following corvettes are among Canadian war losses: *Charlottetown*, *Levis*, *Louisburg* and *Weyburn*.

Armed Merchant Cruisers

Photo Page 144

PRINCE DAVID, PRINCE HENRY (ex-*North Star*, ex-*Prince Henry*), PRINCE ROBERT (all built in England and launched 1930). Standard Displacement: 7,000 tons. Dimensions: 385' x 57' x 21'. Propulsion: Two screws, two sets geared turbines. Speed: 24 kts. Armament unreported.

The Canadian navy includes many armed merchant cruisers taken over from such great peacetime fleets as the Canadian Pacific. The names of armed merchant cruisers are rarely announced, however, since their characteristics and performance are too widely known. Names are generally released only in event of loss. The main armament of armed merchant cruisers, which serve as escorts in powerful navies like the Allied (in contrast to their function as raiders in such fleets as the German), usually consists of six-inch guns. The three "Prince" vessels above, ex-Canadian National Steamships liners, are unusually speedy for merchantmen of their size, a feature which adds to their naval usefulness. Up to Nov. 15, 1943, no Canadian armed merchant cruisers had been reported lost.

CANADA - AUXILIARIES AND SPECIAL TYPES

FLEET MINESWEEPERS

Over 8 Clinton Class

CLINTON, GATESHEAD, WESTMOUNT (all 1942); WINNIPEG (1943); DRUMMOND-VILLE, GRANBY, MELVILLE, NORANDA and others (launch dates unstated). No particulars available, but are understood to be modified Bangors, possibly identical with Australian Bangors and British Alarms. Are Diesel-engine powered.

36 or more Cowichan Class

Photo Page 146

COWICHAN, ESPERANZA, MAHONE, NIPIGON (all 1940); BURLINGTON, MINAS, PORT HOPE, QUALICUM, TADOUSSAC, THUNDER, WASAGA (all 1941); KENORA, MILLTOWN, RED DEER (all 1942); BELLECHASSE, BROCKVILLE, CHIGNECTO, CLAYOQUOT, COURTENAY, ESQUIMALT, GEORGIAN, GODERICH, GRANDMERE, KELOWNA, MALPEQUE, MEDICINE HAT, MIRIMICHI, OUTARD, QUATSINO, QUINT, ST. ANN, SWIFT CURRENT, TRANSCONA, TROIS RIVIERES, UNGAVA, VEGREVILLE, WEDGEPORT (launch dates unreported). Standard Displacement: 750 tons. Dimensions: 180' x 28' 6" x 9'. Propulsion: Two screws, two sets reciprocating engines, 2,400 HP. Speed: 16 kts. Armament: 1 4", 1 3" AA, several smaller, DCT.

Canada's Cowichans are substantially identical with the British Bangor class, many of which, in fact, were built in Canada. In addition to the vessels named above, the Canadian Navy also mans five Bangors on loan from the Royal Navy (*Bayfield*, *Canso*, *Caraquet*, *Guysborough* and *Ingonish*).

COASTAL MINESWEEPERS

105-Foot Type

MMS 102 (1941); LLEWELYN, LLOYD GEORGE (both 1942) and others. Only particulars reported are length, 105', and facts that machinery is Diesel and hull is of wood.

These vessels are comparable to the U. S. YMS type. Sixteen Canadian-type 105-footers are also being built in the United States.

4 Comox Trawler Type

COMOX, FUNDY, GASPE, NOOTKA (all 1938). Standard Displacement: 460 tons. Dimensions: 150' x 27' 6" x 10' 6". Propulsion: Reciprocating engine, 950 HP. Speed: 12.5 kts. Armament: 1 4", some smaller.

1 Armentieres Trawler Type

ARMENTIERES (1918). Steel. Standard Displacement: 357 tons. Dimensions: 130' x 25' x 14'. Propulsion: Reciprocating engine, 480 HP. Speed: 10 kts.

The *Armentieres* is a sister ship of three vessels employed in peacetime by the government fishery patrol. They may also now be used as minesweepers.

Auxiliary Types

RAYON D'OR, REO II, ROSS NORMAN, STANDARD COASTER, STAR XVI, SUDEROY IV, SUDEROY V, SUDEROY VI and other fishing vessels taken over for conversion to minesweepers. Particulars, which vary, unreported.

ARMED YACHTS

Photo Page 146

The Canadian government has taken over an unstated number of yachts for use on patrol and other missions. One, the *Raccoon* (ex-*Halionia*) was lost in 1942. The following additional names and details have been reported:

- BEAVER (ex-*Aztec*, 1902). 802 tons gross.
- BISON (ex-*Avalon*, 1931). 422 tons gross. Diesel-powered.
- CARIBOU (ex-*Elfreda*, ex-*Memory III*, 1928). 306 tons gross. Diesel-powered.
- COUGAR (ex-*Breezin Thru*).
- ELK (ex-*Arcadia*, 1926). 578 tons gross. Diesel-powered.
- GRIZZLY (ex-*Machinonne*).
- HUSKY (ex-*Wild Duck*, ex-*Saramar III*, 1930). 360 tons gross. Diesel-powered.
- LYNX (ex-*Ramona*, ex-*Dolphin*, 1922). 495 tons gross. Diesel-powered.
- MOOSE (ex-*Cleopatra*, ex-*Centaur*, ex-*Naroma*, ex-*Shogun*, 1930). 263 tons gross. Diesel-powered.
- REINDEER (ex-*Mascotte*, ex-*Josephine*, 1926). 337 tons gross. Diesel-powered.
- RENARD (ex-*Winchester*, 1916). 411 tons gross.
- SANS PEUR (ex-*Trenora*, 1933). 856 tons gross. Diesel-powered. Speed: 15 kts.
- WOLF (ex-*Blue Water*).

PATROL CRAFT

Over 40 Motor Type

Photo Page 146

The Canadian Navy has commissioned over 40 112-foot motor patrol vessels of the "Fairmile" type. Particulars: Displacement, unreported; dimensions, 112' x 17' x 4'; propulsion, two screws, two internal combustion engines, 1,260 HP; speed, 25 kts.; armament, 1 3-pounder, 2 MG and depth charges.

Auxiliary Type

A large number of fishing vessels have also been taken over for conversion to patrol craft. Among them are a number of Canadian-registered Japanese-owned vessels seized after Pearl Harbor. The only name reported so far in this group, however, is *Talapus*.

MISCELLANEOUS

The Canadian government normally operates a considerable fleet of vessels on such duties as maintaining communications with northern outposts, fishery protection, customs patrol, etc. All are now in the Navy or under naval control. Since present duties are unstated, their pre-war duties, where known, are listed with their names as a guide to types. A number of unclassified former privately-owned vessels are also included.

ACADIA (1913). Surveying vessel. Displacement: 1,710 tons. Speed: 12 kts. Armament: 1 4", 2 3".

ADVERSUS (1931). Customs patrol. 156 tons gross. Diesel-powered.

ARANMORE (1890). 1,170 tons gross.

ARGENTEUIL (1916). 165 tons gross.

ARLEUX, ARRAS (both 1918). Fishery patrol. 357 tons gross. Sisters of *Givenchy* and trawler minesweeper *Armentieres*.

BERENS, BIRNIE (both 1921). 73 tons gross. Light oil engines.

BERNIER (ex-*Mardep*, 1918). 317 tons gross.

BERTHIER (1916). Ship Channel Service. 368 tons gross.

BRADBURY (1915). Lake Winnipeg fisheries patrol. 394 tons gross.

BRANT (1927). 285 tons gross.

CARTIER (1910). Surveying vessel. Displacement: 897 tons. Speed: 12 kts. Armament: 3 3".

CITADELLE (1932). 431 tons gross.

CYRUS FIELD (formerly privately owned).

DETECTOR (1915). Ship Channel Service. 584 tons gross.

DOLLARD (1913). 761 tons gross.

DRUID (1902). Displacement: 1,000 tons.

ERNEST LAPOINTE (1941). Icebreaker. 1,179 tons gross. Dimensions: 172' x 36' 3" x 13' 6". Propulsion: Reciprocating engines, 1,900 HP. Speed: 14 kts.

ESTEVAN (1912). Displacement: 2,100 tons.

FLEURDELIS (1929). Customs patrol. 316 tons gross. Diesel-powered.

FRENCH (1928). Customs patrol. 226 tons gross.

FRONTENAC (1930). Ship Channel Service. 248 tons gross.

GIVENCHY (1918). Fishery patrol. 357 tons gross. Sister of trawler minesweeper *Armentieres* and fishery patrol vessels *Arleux* and *Arras*.

GRENVILLE (1915). 497 tons gross.

JALOBERT (1911). Ship Channel Service. 278 tons gross.

JOHN W. MCKAY (formerly privately owned).

LADY GREY (1906). Icebreaker. Displacement: 1,080 tons. Dimensions: 172' x 32' x 16'. Propulsion: Reciprocating engines, 2,300 HP. Speed: 14 kts.

LADY LAURIER (1902). Displacement: 1,970 tons.

LANORAIE II (1928). Lighthouse tender. 177 tons gross.

LAURENTIAN (ex-*King Edward*, 1902). 355 tons gross.

LAURIER (1937). Customs patrol. 261 tons gross.

LORD KELVIN (formerly privately owned).

MACDONALD (1937). Customs patrol. 261 tons gross.

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MALASPINA (1913). Fishery patrol. Displacement: 850 tons. Dimensions: 162' 3" x 27' x 13' (depth). Propulsion: Reciprocating engines, 1,350 HP. Speed: 14.5 kts. Armament: 1 6-pounder.

MURRAY STEWART (1916). 234 tons gross.

N. 8. McLEAN (1930). Icebreaker. 3,254 tons gross. Dimensions: 260' x 60' 3" x 28' 6" (depth). Propulsion: Reciprocating engines, 6,500 HP. Speed: 15 kts.

OCEAN EAGLE (ex-St. Arvans, 1919). Tug. 420 tons gross.

SAFEGUARDER (ex-Safeguard, 1914). 665 tons gross.

ST. HELIERS (1919). 929 tons gross.

SANKATY (formerly privately owned).

SAUREL (1929). 1,176 tons gross.

SKIDEGATE (1927). Training launch. Length, 47'. Diesel-powered.

VARENNES (1911). Wood. 187 tons gross.

VERCHERES (1901). 157 tons gross.

WILLIAM J. STEWART (1932). Surveying vessel. 1,295 tons gross.

AUSTRALIA - CRUISERS

1 Shropshire Class

| Name | Builder | Keel Laid | Launched | Comp. |
|------------|-----------|-----------|----------|-------|
| SHROPSHIRE | Beardmore | 2/26 | 7/5/28 | 9/29 |

Standard Displacement: 9,830 tons.

Dimensions: 633' x 66' x 17'.

Propulsion: Four screws, four sets geared turbines, 80,000 SHP. Speed: 32.25 kts.

Armament: 8 8"/50 in twin turrets; 8 4" AA; numerous smaller; 8 21" TT in quadruple mounts. Armor: 1.5"-2" gunhouses; decks totaling 4". Planes: 1. Catapults: 1.

The *Shropshire*, a unit of the *Sussex* class, was presented to Australia in 1942 to replace the *Canberra*, lost in the Battle of Savo Island, Aug. 9, 1942. The *Shropshire* was to have acquired the lost cruiser's name, but the idea was dropped when the U. S. renamed the *Pittsburgh* after Australia's capital and one of her most gallant ships.

1 Australia Class

Photo Page 142

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------|------------|-----------|----------|-------|
| AUSTRALIA | John Brown | 1925 | 3/17/27 | 4/28 |

Standard Displacement: 10,000 tons.

Dimensions: 630' x 68' 4" x 16' 3".

Propulsion: Four screws, four sets geared turbines, 80,000 SHP. Speed: 31.5 kts.

Armament: 8 8"/50 in twin turrets; 8 4" AA in twin gunhouses; numerous smaller AA. Armor: 1.5"-2" turrets and gunhouses; 3"-S" belt; decks totaling 4". Planes: 3. Catapults: 1.

The *Australia* is a sister ship of the *Kent*, differing only in arrangement of 4" AA (only four of 4" AA are in twin gunhouses in the *Kent*). The *Australia* was refitted at the same time as the *Kent*, modifications including the removal of her torpedo tubes, upper decks cut down to save top weight, housing provided for AA guns and addition of planes.

1 Hobart Class

Photo Page 142

| Name | Builder | Keel Laid | Launched | Comp. |
|--------------------|-----------|-----------|----------|-------|
| HOBART (ex-Apollo) | Devonport | 8/15/33 | 10/9/34 | 1/36 |

Standard Displacement: 7,105 tons.

Dimensions: 555' x 56' 8" x 15' 8".

Propulsion: Four screws, four sets geared turbines, 72,000 SHP. Speed: 32.5 kts.

Armament: 8 6" in twin turrets; 8 4" AA in pairs; numerous smaller AA; 8 21" TT in quadruple mounts. Armor: 2"-3" belt; 1" turrets; 2" deck. Planes: 1. Catapults: 1.

Australia acquired the *Hobart* (ex-Apollo) from the British Navy in 1938. The *Hobart* is basically similar to the *Orion* and *Ajax*, though differing sharply in appearance, most noticeably in having two funnels instead of one. Two other near-sisters are the *Leander* and *Achilles*, currently on loan to the New Zealand navy. *Hobart* is named for the capital of Tasmania.

1 Adelaide Class

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|------------------|-----------|----------|-------|
| ADELAIDE | Cockatoo, Sydney | 1915 | 7/18 | 1922 |

Standard Displacement: 5,100 tons.

Dimensions: 462' 8" x 49' 10" x 15' 10".

Propulsion: Two screws, two sets geared turbines, 25,000 SHP. Speed: 25.5 kts.

Armament: 8 single 6"/50; 3 4" AA; numerous smaller. Armor: 1.5"-3" side; 2" deck. Planes: None.

The *Adelaide* is the largest warship ever built in Australia. She was refitted in 1938-9, armament being modified and number of funnels reduced from four to three.

AUSTRALIA - DESTROYERS

8 Tribal Class

Photo Page 142

ARUNTA (1940), WARRAMUNGA (1941), BATAAN (1944) and five others building in Australia. Standard Displacement: 1,870 tons. Dimensions: 355' 6" x 36' 6" x 9'. Propulsion: Two screws, two sets geared turbines, 44,000 SHP. Speed: 36.5 kts. Armament: 8 4.7" twinned behind large shields; 7 smaller, AA; 4 21" TT in quadruple mount.

Australia's Tribal class destroyers are identical with British Tribals except for the replacement of 2 4" AA by two additional 4.7".

3 Napier Class

NAPIER, NIZAM, NORMAN (all 1940). Standard Displacement: 1,695 tons (*Napier*), 1,690 (others). Dimensions: 348' x 35' x 9'. Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 36 kts. Armament: 6 4.7" twinned behind large shields, 1 4" AA, 6 smaller AA, 5 21" TT.

The *Napier*, *Nizam* and *Norman* are N-series Javelin type ships, built for the British Navy, but transferred to Australia in 1941. *Nepal*, sole remaining N vessel in the British fleet, was also transferred to Australia, but was returned to Britain in 1942. (Other N's are now in the Dutch and Polish fleets, or sunk; see *Nepal* in British section for details). *Napier* is fitted as a flotilla leader.

1 Stuart Class

Photo Page 143

STUART (1918). Standard Displacement: 1,530 tons. Dimensions: 332' 6" x 31' 9" x 12' 3". Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 36.5 kts. Armament: 5 4.7", 1 3" AA, 7 smaller, 6 21" TT in triple mounts.

The *Stuart* is a Campbell class leader, transferred from the British Navy to Australia just after the last war.

2 Vendetta Class

Photo Page 143

VENDETTA (1917), VOYAGER (1918). Standard Displacement: 1,090 tons (*Vendetta*), 1,100 (*Voyager*). Dimensions: 312' x 29' 6" x 10' 9". Propulsion: Two screws, two sets geared turbines, 27,000 SHP. Speed: 34 kts. Armament: 4 4", 5 smaller, AA; 6 21" TT in triple mounts. (Armament possibly modified 1939).

The *Vendetta* and *Voyager* are Admiralty V's, built for Australia during the last war. Now probably used as escorts, they may have sacrificed torpedo armament.

AUSTRALIA - ANTI-SUBMARINE

1 Warrego Class Sloop

WARREGO (1940). Standard Displacement: 1,060 tons. Dimensions, machinery and speed unreported. Armament: 2 4" AA in twin mount; numerous smaller AA.

The *Warrego* is an improved edition of the *Yarra*, lost in the disastrous Java Sea campaign of early 1942.

1 Swan Class Sloop

SWAN (1936). Standard Displacement: 1,060 tons. Dimensions: 266' x 36' x 7' 6". Propulsion: Two screws, two sets geared turbines, 2,000 SHP. Speed: 16.5 kts. Armament: 3 4" AA, 4 3-pounder AA, several MG in multiple mounts.

The *Swan* resembles the British Leith class of sloop, main difference being in armament. (Leith class mounts 4.7" as main guns).

AUSTRALIA - AUXILIARIES AND SPECIAL TYPES

MOTOR TORPEDO BOATS

12 motor torpedo boats, probably of Thornycroft design (a standard British type), were ordered in Australia in 1939. No further details reported.

FLEET MINESWEEPERS

17 or more Ballarat Class

BALLARAT, BATHURST, LISMORE, LITHGOW, MARYBOROUGH (all 1940); BENDIGO (1941); GEELONG, GOULBURN, KALGOORLIE, KATOOMBA, LAUNCESTON, MILDURA, ROCKHAMPTON, TAMWORTH, TOWNSVILLE, WARNAMBOOL, WOLLONGONG (launch dates unreported). Standard Displacement: 93B tons. Armament: 1 4" AA, 1 3" AA, several smaller, possibly DCT. Other details unstated.

The Ballarats, all built in Australia, appear to be modified Bangors (Bangor type is Britain's principal modern minesweeper), and may be identical with the new Alarm class of Royal Navy fleet minesweepers. *Armidale*, a Ballarat, lost off Timor in 1942. Another, *Wallaroo*, lost in collision, 1943.

1 Moresby Class

MORESBY (ex-*Silvio*, 191B). Standard Displacement: 1,320 tons. Dimensions: 276' 6" x 35' x 12'. Propulsion: Reciprocating engine, 2,500 HP. Speed: 17 kts. Armament: 1 3-pounder.

The *Moresby* is a peacetime surveying vessel converted to her present duties in 1939.

BOOM DEFENSE VESSELS

KAOLA, KANGAROO (both 1939). Standard Displacement: 730 tons. Substantially similar to British Barricade Class.

KOOKABURRA (193B). Standard Displacement: 535 tons.

MISCELLANEOUS

PENGUIN (ex-*Platypus*, 1916). Depot ship. Standard Displacement: 3,455 tons.

KURUMBA (1916). Oiler. 3,97B tons gross.

CERBERUS (ex-*Kooronga*). Motor tender. Displacement: 61 tons.

INDIA - ANTI-SUBMARINE

Corvettes

HYDERABAD, PUNJAB (both 1941); OUDH (1942).

The Indian Navy operates a number of British-built corvettes, doubtless of the standard Flower type. The three above, however, are the only ones so far identified. *Pathan*, a World War I escort vessel lost in 1940, was rated a corvette.

War Program Sloops

KISTNA (built in Britain, 1943); CAUVERY, GODAVERI, JUMNA, NARBUDA, SUTLEJ (launch dates unreported).

New Indian sloops, of which the above is by no means a complete list, are generally built in Australian or British yards. If Australian, they are of the *Warrego* type; if British, probably *Wren* or *Black Swan*.

4 Pre-war Sloops

HINDUSTAN (1930). Built in Britain. Standard Displacement: 1,190 tons. Dimensions: 296' 6" x 35' x 3' 9". Propulsion: Two screws, two sets geared turbines, 2,000 SHP. Speed: 16.5 kts. Armament: 2 4", 4 3-pounder AA, 10 smaller AA (possibly since increased). Internal arrangements especially designed for hot climate service.

CLIVE (1919). Built in Britain. Standard Displacement: 1,74B tons. Dimensions: 262' 3" x 3B' 6" x 14'. Propulsion: Two screws, two sets geared turbines, 2,000 SHP. Speed: 14.5 kts. Armament: 2 4", 4 3-pounder AA, 12 smaller AA (possibly since increased).

LAWRENCE (1919). Built in Britain and served as dispatch vessel for some years before assignment to sloop duties. Standard Displacement: 1,210 tons. Dimensions: 241' 6" x 34' x 12' max. Propulsion: Two screws, two sets geared turbines, 1,900 SHP. Speed: 15 kts. Armament: 2 4"; 4 3-pounders; 12 smaller, AA.

CORNWALLIS (ex-*Lychnis*, 1917). Built in England. Standard Displacement: 1,383 tons. Dimensions: 277' 9" x 35' x 14' 6". Propulsion: Single screw, reciprocating engines, 2,500 HP. Speed: 16.5 kts. Armament: 3 4"; 4 3-pounder; 12 smaller, AA.

Indus, the most modern pre-war Indian sloop, was lost off Akyab in 1942. *Cornwallis* was built for the British navy and sold to the Indian government in 1921. A sister ship, *Elphinstone*, remaining in the British navy, was wrecked in a storm in 1925. *Hindustan* is a slightly enlarged edition of the British Hastings class sloop.

INDIA - AUXILIARIES AND SPECIAL TYPES

FLEET MINESWEEPERS

Over 10 Bengal Class

BENGAL, CARNATIC, KHYBER, KONKAN, KUMAON (all 1942); BALUCHISTAN, KATHIAWAR, ORISSA, RAJPUTANA, ROHILKHAND (launch dates unreported) and others. No particulars released, but appear to be of British Bangor or Australian Bendigo type. Some built in Indian shipyards. Others, including the *Bengal*, which sank a Japanese patrol vessel on her way to India on her maiden voyage, were built in Australia.

SURVEYING VESSEL

INVESTIGATOR (ex-cable ship *Patrick Stewart*, 1924). Displacement: 1,572 tons. 12.5 kts. Probably armed since 1939.

TRAWLERS

Over 9 Indian-built Basset Type

BARODA, LAHORE, TRAVANCORE (all 1941); AGRA, LUCKNOW, POONA (all 1942); AMRITSAR, BERAR, KARACHI (launch dates unstated) and others. Built at Calcutta. Similar to British Basset type. All fitted for minesweeping.

1 Madras Type

MADRAS (1919). Built at Calcutta. Standard Displacement: 413 tons. Used for target towing before war. Probably rearmed.

EX-MERCHANT VESSELS

The Indian Navy has taken over a number of merchant vessels of various types. Among them are *Netroboti*, *Rotnogiri*, *Selomo* and *Sonovoti* (present names; former mercantile names unstated). Duties to which each has been assigned have not been announced.

MISCELLANEOUS

A large number of 72-foot motor gun boats and launches, tugs and other small craft have been built in Indian yards and are serving in the Indian Navy.

NEW ZEALAND

LIGHT CRUISERS

2 Leander Class

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|---------------|-----------|----------|----------|
| LEANDER | Devonport | 2/18/30 | 9/24/31 | 3/23/33 |
| ACHILLES | Cammell Laird | 3/31 | 9/ 1/31 | 10/10/33 |

Standard Displacement: *Leander*, 7,270 tons; *Achilles*, 7,030; Dimensions: as British *Orion*.

Propulsion: as *Orion*.

Armament: as *Orion*, except *Achilles* has 4 instead of B 4" AA. Armor: as *Orion*. Planes: 1. Catapults: 1.

Leander and *Achilles* are on loan to the New Zealand navy and are still carried on the British navy list.

CORVETTES

KIW1 (1940), TUI (1941). Built in Scotland to standard British Flower class corvette design.

MINESWEEPING TRAWLERS

HAINU (1941), AWATERE, MANUKA, WAIU, WAIHO, WAIITI, WAIKAKA, WAIKANAE (launch dates unreported) and others. Built in New Zealand. Particulars wanting.

OTHER VESSELS

A good number of New Zealand merchant vessels have been taken over for service ranging from trawler to armed merchant cruiser.

MONOWAI. Armed merchant cruiser. No particulars reported.

TOIA (ex-*St. Bonifacio*, ex-*St. Fergus*, 191B). Fleet tug, of British Saint class.

VIKING. Sail training vessel. Length, 67'.

WAKAKURA (ex-*TR-1*). Ex-trawler, boom defense vessel, specifications similar to British *Coronet*.

OTHER BRITISH

BURMA

A number of motor launches are manned by the Burma division of the Royal Naval Volunteer Reserve.

CEYLON

The Ceylon division of the R.N.V.R. mans several drifters.

KENYA AND ZANZIBAR

ALHATHARI, NDOVU (192B). Ex-tugs fitted as minesweepers. 380 tons. 125' x 25' x B'. 500 HP. 10 kts. 1 3", 2 light MG, 1 DCT.

NEWFOUNDLAND

(Newfoundland vessels are mainly used for transport to isolated communities and similar purposes).

NORTHERN RANGER (1936). 1,365 tons gross. 220' x 36' x 16' 10". Coal-fired. 11.5 kts. Strengthened for ice navigation.

KYLE (1913). 1,055 tons gross. 220' x 32' x 16' B". 13.5 kts. Strengthened for ice navigation.

SAGONA (1912). 808 tons gross. 175' x 28' 3" x 16' 6". 11 kts. Strengthened for ice navigation.

DAISY (1912). 248 tons gross. 125' x 18' x 10'. 10 kts.

PORTIA, PROSPERO (both 1904). 978 tons gross. 204' x 31' x 17'. 11.5 kts.

ARGYLE, CLYDE, HOME (all 1900). 439 tons gross. 154' 6" x 28' x 12'. 10 kts.

GLENCOE (1899). 767 tons gross. 208' x 30' x 16'. 11 kts.

SOUTH AFRICA

MINESWEEPER

PROTEA (ex-*Crozier*, 1919). Of British Albion class, acquired 1921, sold to private service, 1932, re-acquired 1939.

TRAWLERS AND WHALERS

BEAVER. Ex-trawler employed as minesweeper.

CRASSULA (1935). Ex-trawler. 261 tons gross. 125' 6" x 23' 6" x 12'. 480 HP. 1 6-pounder.

SOUTHERN ISLES, SOUTHERN MAID, SOUTHERN SEA. Ex-whalers employed as minesweepers.

MOTOR LAUNCHES

INKOSANA, INSIZWA (1941) and others. 45 tons. Length, 72'. Diesel motors.



Song of Elmer... the pilot who never gets tired

He holds no place in the Officer's Mess
for he does not sleep or eat,
He's the Quietest Birdman ever took
his place in a cockpit seat—
He joins no laughter, nor shoots the breeze,
nor whistles, nor hums, nor sings,
But he's flown more planes than any man
who ever wore pilot's wings...

... has Elmer!



He's an old, old hand, as old hands go
in a young man's game today,
For he circled the globe in 'Thirty-three
with Post in the Winnie Mae—
He's an Army man, he's a Navy man,
and he flies with the R.A.F.,
And the Yankees say, and the British say
of pilots, he's the best...

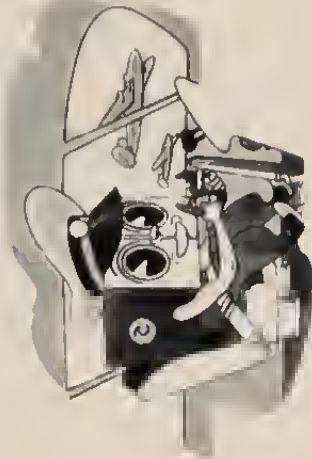
... is Elmer!



Often when bombers have levelled off
for the last tense bombing runs,

And the bomb-bay doors are opened wide,
and the gunners man the guns,
When the flak comes up as the bombs
go down, and the target zone is clear,
Then who is the pilot who holds the course
set by the bombardier...?

It's Elmer!



He can hold a plane on a chosen course
while the crewmen rest or sleep,
He can level off for a landing glide,
or bank her sharp and steep—
He can spiral up, he can spiral down,
or hold her level and true—
His hydraulic muscles never tire
the way human muscles do...

... not Elmer's!



And so bombing, transport, and cargo
planes, take Elmer on every flight
To spare the pilot and rest the crew
for emergency, storm, or fight—

He needs no rest, for he never gets tired,
being only a cold machine,
Just wheels and wires and gears and cogs,
with brackets and stuff between...

... is Elmer!



He wears no medals, he holds no rank.
Why should he? He cannot feel
The courage that flares in time of need
for he's only alloy and steel!
So when nerve is needed, the bombardier,
the pilots, the gunners, too,
The navigator, and all the rest,
are the boys who pull her through...

... NOT Elmer!

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be obtained without charge by writing
the Sperry Gyrocompass Company.

U. S. S. R. - BATTLESHIPS

1 Tretii International Class

| Name | Builder | Keel Laid | Launched | Comp. |
|----------------------|-------------------|-----------|----------|-------|
| TRETII INTERNATIONAL | Ordjonikidze Yard | 7/15/39 | | |

Standard Displacement: 35,000 tons. Dimensions: 820' x 110'. Draft unreported.

Propulsion: Four screws, four sets geared turbines. Speed: 30 kts.

Main Armament: 9 16" in triple turrets.

The *Tretii International* is the largest ship, merchant or war, which the Soviet Union has attempted to build. Construction was probably suspended with the outbreak of the Nazi-Soviet war; the Ordjonikidze Yard is in Leningrad. Many parts for the *Tretii International* were to have been obtained in the U. S. and Germany. A sister ship, *Krasnaya Bessarabia*, was destroyed on the ways at the Marti Yard at Nikolaiev before the Nazis occupied that Black Sea shipbuilding center in August, 1941.

3 Pariskaya Kommuna Class

Photo Pages 149, 150

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------------------------------|--------------|-----------|----------|-------|
| PARISKAYA KOMMUNA (ex-Sevastopol) | Baltic Works | 6/09 | 6/11 | 1/15 |
| MARAT (ex-Petropavlovsk) | Baltic Works | 6/09 | 9/11 | 1/14 |
| OKTIABRSKAYA REVOLUTIA (ex-Gangut) | Galernii | 6/09 | 10/11 | 1/14 |

Standard Displacement: 23,000 tons (*Pariskaya Kommuna*); 23,600 (*Marat*); 23,250 (*Oktiabrskaya Revolutia*). Dimensions: 619' x 87' x 27' 6".

Propulsion: Four screws, four sets geared turbines, 42,000 SHP. Speed: 23 kts.

Armament: 12 12"/52 in triple turrets; 16 4.7"/59; numerous smaller AA and DP. 4 18" TT. Armor: 8.75" belt, 3" internal belt; 10"-12" turret faces; 3" deck. Planes: 1. Catapults: 1 in *Pariskaya Kommuna*, none in others.

These ancient vessels, Russia's only battleships, truly bear charmed lives. Two, the *Marat* and *Oktiabrskaya Revolutia*, have been cooped up at Kronstadt, the Leningrad naval base, throughout the siege of Leningrad; the third, the *Pariskaya Kommuna*, has been ranging a Black Sea dominated most of the time by Nazi planes. Yet only the *Marat*, which was hit late in 1941, seems to have been seriously damaged. All three underwent extensive relits in the period immediately before the war, anti-aircraft armament notably being strengthened. These vessels were built as coal-burners; they may now be oil burners. The *Marat* and *Oktiabrskaya Revolutia* have ice-breaking bows.

U. S. S. R. - CRUISERS

It has been reported with a fair degree of authenticity that Germany sold the uncompleted 10,000-ton cruiser *Lützow* to the USSR in 1940, and that she is now serving in the Russian fleet as the *Petropavlovsk*. She has been rearmed with 7.1" guns, as other modern Russian cruisers, her armament now consisting of 12 7.1" in triple turrets; 12 4" AA in twin gunhouses; and 12 37 mm AA, if the reports of the transfer are correct. She carries four planes and is equipped with one catapult. Her turrets are now reported to be protected by 4" armor. Her other particulars are reputed unchanged and can be found under the Admiral Hipper class of German heavy cruisers.

6 Kirov Class

Photo Page 150

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------|--------------------|-----------|----------|-------|
| KIROV | Kirov Yard | 1934 | 1936 | 8/37 |
| MAXIM GORKI | Kirov Yard | 1934 | 1937 | 1939 |
| KUIBYSHEV | Nikolaiev or Kirov | 1935 | 1939 | 7/41 |
| ORJONIKIDZE | Nikolaiev | 1938 | 1941 | 1941 |
| MOLOTOV | Nikolaiev | | 1939 | |
| VOROSHILOV | Nikolaiev | | 1940 | |

Standard Displacement: 8,800 tons.

Dimensions: 627' 3" x 64' x 17'.

Propulsion: Four screws, four sets geared turbines (with Diesels for cruising), 100,000 SHP. Speed: 34 kts.

Armament: 9 7.1" in triple turrets; 8 4" AA except in *Kirov*, 6 4" AA; numerous smaller AA. 6 21" TT in triple mounts. Mines: 60. Armor: 2"-3" side; 2" deck; 3"-4" turret faces. Planes: 4. Catapults: 1.

When the Nazis occupied Nikolaiev, they claimed to have captured a partially completed cruiser identified as the *Orjonikidze*. The evidence indicates, however, that the Nazis actually got the wreckage of two other Kirov class hulls (to have been named *Frunze* and *Kaganovich*) and that the *Orjonikidze*, launched but a short time before, got away. The Kirovs are the Russian fleet's most modern heavy ships.

1 Krasni Kavkaz Class

Photo Page 151

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------------------------------|-----------|-----------|----------|-------|
| KRASNI KAVKAZ (ex-Admiral Lazarev) | Nikolaiev | 1914 | 6/16 | 1924 |

Standard Displacement: 8,000 tons.

Dimensions: 530' x 50' 6" x 20' 4".

Propulsion: Geared turbines, 55,000 SHP.

Speed: 30 kts.

Armament: 4 7.1" in single gunhouses; 8 4" AA; numerous smaller AA. 12 21" TT in triple mounts. Armor: 3" side; 1" deck; 3" gunhouses. Planes: 1. Catapults: 1.

The *Krasni Kavkaz* was begun before the revolution, but not completed until many years later. She was to have been a sister of the *Profintern* and *Krasni Krim*. The *Krasni Kavkaz* may have been rearmed just before the war, gaining not only additional anti-aircraft armament, but a new main battery as well. She burns both oil and coal and is stationed in the Black Sea.

2 Krasni Krim Class

Photo Page 152

| Name | Builder | Keel Laid | Launched | Comp. |
|---|-----------|-----------|----------|-------|
| KRASNI KRIM (ex-Profintern) | Tallinn | 1913 | 5/15 | 1/25 |
| CHERVONAYA UKRAINA (ex-Admiral Nakhimov) | Nikolaiev | 1913 | 10/15 | 12/24 |

Standard Displacement: 6,600 tons (*Profintern*), 6,900 (*Krasni Krim*). Dimensions: 507' 9" x 50' 4" x 18' 4".

Propulsion: Geared turbines, 50,000 SHP. Speed: 29.5 kts.

Armament: 15 5.1" in single gunhouses; 8 4" AA; numerous smaller AA. 12 21" TT in triple mounts. Mines: 100. Armor unreported. Planes: 2. Catapults: 0.

Units of the Black Sea fleet. *Chervonaya Ukraina* may have been sunk. *Krasni Krim*'s reported loss appears contradicted by announcement of commemoration on July 15, 1943 of anniversary of her commissioning.

U. S. S. R. - DESTROYERS

4 or more Kazan Class

KAZAN (1941), KRASNOYARSK (1941), ROSTOV (1941), VERNOLENINSK (1941). Built at Nikolaiev. Specifications unreported. Are understood to be "improved Leningrads."

These units have been with the Black Sea Fleet throughout the war.

47 or more Stremitelni Class

Photo Pages 151, 152

STREMITELNI (1936); SMETLIVI (1937); GROMKI (1938); LIEPNI; GROSNI; GROSOVOI; GNIEVNI; GREMIASHTCHI; SMYELI; SVIRYEPI; STEREGUCHI; BESHUMNI; ZHIVUCHI; ZADORNI; ZORKI; SILNI; ZAVIETNI; BODRI; BISTRI; BESPOSHTADNI; BEZUPRESHNI; SMELNI; BRAVI; BIEDOVI; BEZPOKOINI; BUINI; BEZTRASHNI; GRAVENI; METKI; MOLODETSKI; RYESHITELNI; SERDITI; STROGI; ZHIVOI; SOKRUSITELNI; LIKOL; OPASNI; OPITNI; LETUCHI; SLAVNI; STOIKI; GRANIONI; STOROSHEVOI; SUROVI; SVOBODNI; VNIMATELNI. Built at both Baltic and Black Sea yards. Standard Displacement: 1,800 tons.

Dimensions unreported. Propulsion: Geared turbines, two screws, 50,000 SHP. Speed: 37 kts. (Units of Stremitelni class have reached 40 kts. on trials). Armament: 4 S.1"/SO; 2 3"/SO AA; numerous smaller AA; 6 21" TT in triple mounts; 4 DCT.

Several Stremitelnis have undoubtedly been lost in action since June 22, 1941. Several are in the Arctic, either as original units of the Soviet Arctic fleet or having joined it since the investiture of Kronstadt and Leningrad by way of the recently completed White Sea Canal. *Streshni* mined off Oesel, 1942. Nazi claims to have sunk *Beztrashni*, *Beshumni*, *Serditi*, *Smyeli*, *Smetlivi*, *Grosavoi*, *Svobodni* and *Gniemi* unconfirmed. Main guns of at least some Black Sea Stremitelnis, and possibly others of class, are completely enclosed in gunhouses; others have large shields.

1 Tashkent Class

Photo Page 153

TASHKENT (11/21/37). Built by Orlando at Leghorn, Italy. Standard Displacement: 2,800 tons. Dimensions: 457' 8" x 45' x 11' 6". Propulsion: Geared turbines, two screws, 95,000 SHP. Speed: 39 kts. Armament: 6 S.1"/SS; 6 45 mm AA; numerous smaller AA; 9 21" TT in triple mounts; 4 DCT.

Although the *Tashkent* was intended for service in the Far East, it has served as a unit of the Black Sea Fleet throughout the war. The *Tashkent* played an outstanding part in the siege of Sevastopol, 1941-2, repeatedly running supplies through to the heroic garrison despite the fact that the Nazis controlled the skies over the city and its approaches.

18 Leningrad Class

LENINGRAD (1935); MINSK (1936); ARKHANGELSK; KRONSTADT; MURMANSK; PETROZAVODSK; KHARBINSK; TOMSK; TULA; TVER; MOSKVA; KHARKOV; OCHAKOV; SIVASH; PEREKOP; STALINSK; TIBILISSI; VOLOCHEVKA. First six were built in Leningrad, last one in Vladivostok and remaining units at Nikolaiev. Standard Displacement: 2,900 tons. Dimensions: 459' 4" x 45' x 14'. Propulsion: Geared turbines, two screws, 90,000 SHP. Speed: 36 kts. Armament: 5 S.1"/SS; 2 3"/SO AA; numerous smaller AA (3" AA battery possibly increased); 6 21" TT in triple mounts; 4 DCT; fitted for minelaying.

Some units of the Leningrad class—which fall into the category of the French-created large *contre-torpilleur* of the Mogador type—are possibly sunk, although Nazi claims, specifically of *Moskva*, are probably exaggerated. Leningrad class units of the Baltic fleet may now be in the Arctic; some are known to be among the Baltic fleet units which have reached the Arctic via the White Sea Canal. *Kiev* and *Erivan* of this type blown up at Nikolaiev building yard to prevent enemy capture. When first built, Leningrads were wet forward and generally poor sea boats. It was later reported that one of S.1-inch guns was removed to lessen top weight. Recent photos suggest rather their regrouping and possibly elimination of an unusual feature of the *Leningrad*, *Minsk* and perhaps others—gunhouses for the three-inch AA guns.

4 Petrovski Class

Photo Pages 151, 152, 153

PETROVSKI (ex-Korfu, 1917); SHAUMYAN (ex-Levkos, 1917); NEZAMOJNIK (ex-Zante, 1917); FELIX DZERZHINSKI (ex-Kaliakria, 1918). Standard Displacement: 1,308 tons (*Petrovski*), 1,323 (others). Dimensions: 303' 6" x 29' 6" x 9'. Propulsion: Geared turbines, 29,000 SHP. Speed: 33 kts. Armament: 4 3.9"; 1 3" AA; smaller AA (heavy AA battery possibly increased); 12 18" TT in triple mounts; DCT; carry 45 mines.

The Petrovskis are among the Soviet state's legacies from the Czarist regime.

1 Kalinin Class

KALININ (ex-*Priamislav*, 1914). Standard Displacement: 1,354 tons. Dimensions: 344' 6" x 31' 3" x 9' 9". Propulsion: Geared turbines, 32,700 SHP. Speed: 33 kts. Armament: 4 3.9"; 1 3"/SO AA; smaller AA (main AA battery possibly increased); 9 18" TT in triple mounts; 60 mines.

A sister ship of the *Kalinin*, the *Karl Marx*, was found sunk in Tallinn harbor in 1941 when the Nazis captured that port. The *Kalinin*, *Petrovski* and other similar ex-Czarist destroyers are among the largest destroyers built during the World War. They are 250 tons heavier than the standard U. S. types of the time.

9 Uritski Class

URITSKI (ex-*Zabiaka*); VOLODARSKI (ex-*Pobiediti*); ARTEM (ex-*Zinaviev*, ex-*Azard*); ENGELS (ex-*Desna*); STALIN (ex-*Samson*); 1 ship, name unknown (ex-*Rykov*, ex-*Kapitan Kern*); KARL LIEBKNECHT (ex-*Kapitan Luetnant Belli*); VOIKOV (ex-*Trotsky*, ex-*Leiter*

Ilyin); LENIN (ex-*Isylmetiev*). Launched 1914-15. Standard Displacement: 1,150 to 1,417 tons. Dimensions: 314' 9" to 321' 6" x 30' 6" x 9' 9". Propulsion: Geared turbines, 30,000 SHP. Speed: 28 to 30 kts. Armament: 4 3.9"; 1 3"/SO AA; smaller AA (main AA battery possibly increased); 9 18" TT in triple mounts; fitted as minelayers.

Some of these units may have been sunk. The Uritskis differ among themselves not only in the details listed above, but in appearance as well.

1 ex-Yakov Sverdlov Class

1 ship, name reported changed from *Yakov Sverdlov*, now name unreported (original name, *Novik*). Launched 1911. Standard Displacement: 1,271 tons. Dimensions: 336' x 31' x 9' 6". Propulsion: Geared turbines, 36,500 SHP. Speed: 32 kts. Armament: same as Uritski class.

U. S. S. R. - TORPEDO BOATS

6 or more Sasovietz Class

SASOVIETZ, SERP, SIBIRIAK, SOKKI, SOVNARKOM, STAMOR and others (all 1937-9 and later). Standard Displacement: 900 tons. Dimensions unreported. Propulsion: Two screws, two sets geared turbines, SHP unreported. Speed: 31.5 kts. Armament: 3 3.9", several smaller, 3 18" TT.

The Sasovietz type, of which it is highly probable that a great many more than are named have been built, are improved editions of the numerous Shtorm class.

17 or more Shtorm Class

Photo Page 153

BURIYA, GROM, GROZA, LUKOI, METEL, MOLNYA, SHKVAL, SHTORM, SIKLON, SMERTCH, SNIEG, TAIFUN, TUCHA, URAGAN, VIKHR, VIYUGA, ZARNITSA (all 1932-36). Standard Displacement: 740 tons. Dimensions: 228' pp. x 24' x 10'. Propulsion: Two screws, two sets geared turbines, 13,200 SHP. Speed: 25 kts. Armament: 2 3.9", 4 40 mm AA, several MG, 3 18" TT, 2 DCT.

As originally built, the Shtorms (some of which are named after the elements) did not prove especially satisfactory. Some or all have since been modified. *Shtorm* and *Shkval* are in the Black Sea, and *Vikhr* is in the Far East. Most of the rest were in the Baltic before the war; they have probably been moved to the White Sea via the new White Sea Canal. The Germans claim to have sunk the *Tucha*. *Purga*, a Shtorm-type vessel, was wrecked in a White Sea storm in 1938.

1 Konstruktor Class

KONSTRUKTOR (ex-*Sibirski-Strelsk*, 1906). Standard Displacement: 625 tons. Dimensions: 246' x 27' 6" x 8' 3". Propulsion: Reciprocating engines, 7,300 HP. Speed: 25 kts. Armament: 3 3.9", 2 4-pounder AA, 1 18" TT; fitted as minelayer, capacity, 50 mines.

The *Konstruktor*, a coal-burner, serves as flotilla leader to Baltic fleet minesweepers.

3 Alfater Class

ALFATER (ex-*Turkmenetiz-Stavropolski*), MARKIN (ex-*Ukraina*), BABINSKI RABOTCHI (ex-*Voiskovo*) (all 1904). Standard Displacement: 580 tons. Dimensions: 240' x 23' 9" x 7' 6". Propulsion: Reciprocating engine, 6,200 HP. Speed: 25 kts. Armament: 3 3.9", 1 1-pounder, 2 MG, 2 18" TT; fitted as minelayers, capacity, 16 mines.

These three ancient coal-burners are stationed in the Caspian Sea.

1 ex-Sulev Class

ex-SULEV (ex-A-32, 1916). Standard Displacement: 228 tons. Dimensions: 165' 6" x 17' 6" x 6'. Propulsion: Geared turbine, 3,500 SHP. Speed: 26 kts. Armament: 2 3"/SO, 2 18" TT in twin mount; fitted as minelayer, capacity, 10 mines.

The ex-Sulev was a unit of the Estonian navy, taken over when the USSR absorbed Estonia in 1941. Estonia acquired her by salvage; as the German A-32, she was sunk on the Estonian coast in 1917. Her present name has not been disclosed.

2 Sladkov Class

SLADKOV (ex. *Vsodnik*), ZHELESNIAKOV (ex. *Amuretz*) (both 190S). Standard Displacement: 710 tons. Dimensions: 233' x 24' 3" (*Sladkov*), 23' 7" (*Zhelesniakov*) x 7' 6" (*Sladkov*), 7' 9" (*Zhelesniakov*). Propulsion: Reciprocating engines, 6,500 and 6,200 HP respectively. Speed: 2S kts. Armament: 3 3.9", 1 3-pounder, 1 1-pounder AA, 4 MG, 3 18" TT; fitted as minelayers, capacity 2S mines.

The *Sladkov* and *Zhelesniakov*, coal-burners which certainly cannot now equal their rated speed (quoted above), may have been scrapped.

U. S. S. R. - ANTI-SUBMARINE

1 or more U. S.-built 110-foot Type

On June 13, 1943, a U. S.-built submarine chaser of the standard 110-foot SC type was transferred to the USSR. The vessel was built at Miami. Other SCs may have been lend-leased to Russia subsequently.

2 Dzerzhinski Class

DZERZHINSKI (ex. *PS-8*), KIROV (ex. *PS-26*) (both 1934). Built by Ansaldo, Italy. Standard Displacement: 810 tons. Dimensions: 262' 6" x 27' 3" x 16' 9". Propulsion: Three screws, three sets Diesels, 4,800 HP. Speed: 20 kts. Armament: 3 4", 4 40 mm AA; fitted for minelaying, mine capacity unstated. (Stationed in Far East).

2 Former Baltic State Vessels

ex-PRESIDENTAS SMETONA (ex. German *M-59*), ex-VIRSAITIS (ex. German *M-68*) (both 1917). Standard Displacement: 380 tons. Dimensions: 193' x 24' 3" x 7' 3". Propulsion: Reciprocating engines, 1,800 HP (first vessel), 1,850 (second). Speed: 16 and 17 kts., respectively. Armament: 2 3", 3 MG (first vessel); 2 3.4", 2 S7 mm, 4 MG (second).

The *Presidentas Smetona* is a former Lithuanian vessel which was taken over by the Soviet Union on absorption of Lithuania in 1940. The *Virsaitis* was similarly acquired from the Latvian navy. Both vessels were originally German World War I minesweepers.

U. S. S. R. - SUBMARINES

As the Nazi-Soviet war began, the Soviet Navy had over 200 submarines in service. Between 70 and 90 of these were stationed in the Far East for the purpose of disrupting Japanese supply lines to the mainland of Asia in the event of hostilities. Production of submarines has long been maintained at a high rate in Russia. One or more classes which have not been specifically identified probably exist; the editors of NAVY YEARBOOK have several photos of Soviet submarines which cannot be satisfactorily identified. A great many have probably been lost since June, 1941; only rarely, however, have they been named. Hence, the names listed below are generally as of mid-1941.

D Class

The number of D class vessels is unknown. From the single photo available, they appear to be a development of the numerous Chuka class. Armament includes a short three- or four-inch gun.

Photo Page 154

10 or more S Class

S-1.10 and possibly others. Date from about 1939. Displacement: Surface, 780 tons. Armament: 8 21" TT, 1 4", 1 37 mm AA. Other details unknown.

Photo Page 155

The S series of Soviet submarines appear to be enlargements of one of the Chuka type. The Nazis claim to have sunk S-1 and S-3.

17 or more Pravda Class

PRAVDA, SVIEZDA, ISKRA and 14 or more others (all 1936). Displacement: Surface, 1,200 tons; submerged, 1,800. Dimensions, machinery and speed unreported. Armament: 8 21" TT, 2 4"/4S, 1 37 mm AA.

The Pravdas are capable of unusually rapid diving for submarines of their size, and are believed to be the largest of the new Soviet submersibles. As in many other Russian undersea craft, main guns are not placed on deck but housed in an elongated conning tower.

2 ex-Kalev Class

ex-KALEV, ex-LEMBIT (both 1936). Displacement: Surface, 600 tons; submerged, 820. Dimensions: 190' x 24' 6" x 11' 6". Propulsion: Diesels (1,200 HP) and electric motors (450 HP). Speed: Surface, 13.5 kts.; submerged, 8. Armament: 4 21" TT (all bow), 1 40 mm AA; fitted as minelayers, capacity, 20 mines.

These two ships, built by Vickers in England, are former Estonian navy units, taken over when the USSR absorbed Estonia in 1941. Their new names are unreported. Two smaller submarines, formerly of the Latvian navy, similarly taken over by Russia, have been lost. They were the *Ronis* and *Spidola* (Latvian names).

45 Chuka Class

BIELUGA, BITSHOK, CHUKA, DELFIN, ERSK, FOREL, KASSATKA, KESAL, KUMSA, LIN, LOSOS, MAKREL, NALIM, OKUN, OSETR, PALTUS, PESKAR, PIKSHA, PLOTVA, SEMGA, SIG, SKAT, SOM, STERLIAD, TRESKA and about 20 others (all 193S-38). Displacement: Surface, 600 to 650 tons; submerged, 748. Dimensions, machinery and speed unreported. Armament: 4 21" TT, 2 1-pounder AA; fitted as minelayers, mine capacity unknown.

The Chukas incorporate at least two, and probably three, types which are substantially different externally. The Lin type has a long conning tower sloping toward the rear; the conning tower of the Chuka type itself is rectangular in silhouette, with the AA guns mounted on top. A Soviet submarine with rectangular conning tower in silhouette and pronounced overhang of the tower in bow-on view also appears to be of the Chuka classification.

8 Garibaldietz Class

Photo Page 154

BLUCHER, BUDENNY, CHARTIST, GALLER, GARIBALDIETZ, KARSONARI, ORLOV and 1 other (all 1933-3S). Displacement: Surface, 1,039 tons; submerged, 1,33S. Dimensions and machinery unstated. Speed: Surface, 14 kts.; submerged, 8.5. Armament: 6 21" TT, 1 4"/4S, 1 MG.

The Garibaldietz type, some of which are in the Black Sea and some in the Far East, appear to be enlarged modifications of the L class.

23 or more L Class

FRUNZOVETZ, KRASNOGVARDIETZ, LENINETZ, MUDROVETZ, NARODOVOLETZ, REVOLUTIONER, STALINETZ, SVERDLOVETZ and at least 1S others (all 1929-3S). Displacement: Surface, 896 tons; submerged, 1,318. Dimensions: 279' x 23' x 16' 6". Propulsion: Diesels (2,500 HP) and electric motors (1,200 HP). Speed: Surface, 1S kts.; submerged, 8. Armament: 8 21" TT (six bow, two stern), 1 4"/4S, 1 37 mm AA, 2 MG.

These vessels were originally lettered L and numbered serially instead of named. B-3 (probably has a still unreported new name), lost in the Gulf of Finland during maneuvers in 193S and salvaged also seems to have been of L type. Main gun of L class, forward of conning tower, protected by breastwork.

3 Komsomolka Class

Photo Page 154

DVIGATEL, KOMSOMOLETZ, KOMSOMOLKA (all 1933). Displacement: Surface, 889 tons; submerged, 1,312. Otherwise generally similar to L class, except 1-pounder AA instead of 37 mm and main gun lacks breastwork.

The last two of these vessels were built by contributions from the Komsomols, the Communist youth movement.



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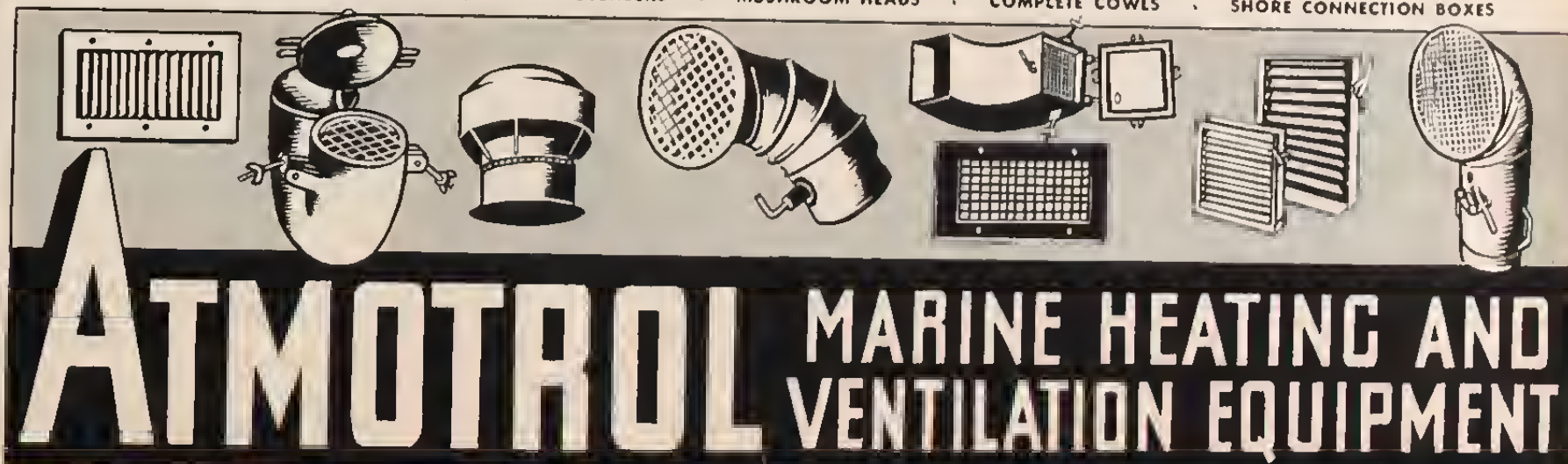
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9 Yakobinetz Class

BEZBOJNIK, BEZVIRNIK, DEKABRIST, GAMARNIK, KRASNI SPANIA, PROFILSKI UKRAINA, SPARTAKOVETZ, SVIEZDOSKA, YAKOBINETZ (all 1931). Displacement: Surface, 959 tons; submerged, 1,370. Dimensions: 284' x 23' 6" x 16' 6". Propulsion: Diesels (2,600 HP) and electric motors (1,200 HP). Speed: Surface, 15 kts.; submerged, 8. Armament: B 21" TT, 1 4"/45, 1 37 mm AA, 2 MG.

Some or all Yakobinetz class vessels are stationed in the Black Sea. Main gun, protected by breastwork, atop conning tower.

50 or more Malodki Class

The Malodkis are midget submarines, of about 200 tons surface displacement, built inland at Gorki and sent to assembly ports in sections. (The name *Malodki* is an abbreviation for "maliya lodki", small submarines). Armament reported to be 2 18" TT and 1 MG; speed, 13 kts. on surface and B submerged. They were built mainly between 1928 and 1930. Many are at Vladivostok. It is doubtful that the type is still in production.

1 ex-British L Class

Ex-L-55 (1918). Displacement: Surface, 870 tons; submerged, 1,139. Dimensions: 235' x 23' 6" x 13' 2". Propulsion: Diesels (2,400 HP) and electric motors (1,600 HP). Speed: Surface, 14 kts.; submerged, 9. Armament: 6 21" TT (all bow), 2 3", 1 MG.

The ex-L-55 was sunk in the Baltic in 1919, raised in 1928 and repaired, sunk again in 1931, and raised once more. It is now in use for training purposes.

3 Bolshevik Class

BOLSHEVIK (ex-Ryss), KRASNOARMEYETZ (ex-Leopard), KRASNOFLOTETZ (ex-Yaguar) (all 1915-16). Displacement: Surface, 650 tons; submerged, 784. Dimensions: 223' x 14' 9" x 12' 8". Propulsion: Diesels (1,000 HP) and electric motors (840 HP). Speed: Surface, 10 kts.; submerged, 8. Armament: 4 18" TT, 1 3", 1 MG; fitted as minelayers, eight dropping gears.

The *Bolshevik*, *Krasnoarmeyetz* and *Krasnoflotetz* are the last of a class of vessels taken over from the Czar's navy. *Rabotchi* sank in the Baltic, 1931; *Tovarich* was sunk by collision in 1935; and *Kommissor* and *Kommunar* were scrapped in 1938. *Krasnoarmeyetz* and *Krasnoflotetz* were modernized in 1937. All three are used for training only.

4 Kommunist Class

KOMMUNIST (ex-AG-24), MARXIST (ex-Kamenev, ex-AG-25), METALLIST (ex-AG-21), POLITRABOTNIK (ex-AG-26) (all 1916-22). Displacement: Surface, 375 tons; submerged, 467. Dimensions: 150' 3" x 15' 9" x 15' 3". Propulsion: Diesels (480 HP) and electric motors (320 HP). Speed: Surface, 12 kts.; submerged, 8. Armament: 4 18" TT, 1 6-pounder.

The *Kommunist*s were designed for the Czar's navy by the Electric Boat Co. of the U. S. They may have been scrapped. When last reported, they were in the Black Sea, where they were being used as training vessels.

U. S. S. R. - AUXILIARIES AND SPECIAL TYPES

MOTOR TORPEDO BOATS

Photo Page 156

The Red Fleet makes extensive use of motor torpedo boats, using them not only for attacking enemy vessels with torpedoes but also on such varied missions as landing reconnaissance and other combat parties behind enemy lines in the Black Sea, the Baltic and Arctic. The number of Soviet MTBs in service is at least 150. The majority are of the Italian MAS type and carry two torpedoes. Displacements vary from six to 35 tons. A late type, built at Leningrad in 1937, displaces 11 tons and has a speed of 42 knots or more. Earlier units powered by machinery of Italian design; later ones may be propelled by modifications of Soviet in-line aircraft engines of high power. Vosper type boats of a late design have also been obtained from the U. S. under lend-lease.

MOTOR GUN BOATS

Photo Page 156

Nos. 201-212 (1937-8). Displacement: 30 tons. Speed: 25 kts. or more. Armament: 2 47 mm; probably also carry depth charges. These vessels, which resemble the Finnish VMV type, are used for a wide variety of duties, especially sub chasing, and are generally comparable to the British motor gun boat.

No. 038 and others. Particulars unreported. The Soviet film, *Black Sea Fighters*, an account of Red Fleet activities during the siege of Sevastopol, shows in action several motor gunboats which differ distinctly from the No. 201 group. These vessels, of which one is No. 038, are larger than the No. 201 and have a third gun, probably of small caliber.

MINELAYERS

In addition to the vessels below, a great many other fleet units are fitted for laying duties.

1 Ex-Estonian Type

When the Russians occupied Estonia in 1939, a 600-ton (standard displacement) patrol vessel was under construction at Reval. This is understood to have been completed as a mine-layer. Dimensions: 190' x 24' x 8', and speed, 16 kts. or more.

600 and 1,200-ton Types

Since 1938 Russian yards have built a large number of minelayers (over 10 identified) of which particulars are wanting, but which are understood to fall into at least two types: one of 600 tons, and the other, 1,200 tons displacement. Photos of the former indicate they are improvements of the Bui class.

20 or more Bui Class

BUI, CHEKA, FUGAS, GAFEL, KAPSUL, KORSHUN, MATROS, MINREP, PARAVAN, PATRON, PLAMYA, PODJIGATEL, PROVODNIK, STRELA, TROS, VECHA, VELTA, VERP, VZRYF, ZAPEL and possibly others (all 1935-6). Standard Displacement: 500 tons. Propulsion: Diesels, two screws. Speed: 16 kts. Armament: 1 4", 4 37 mm AA. Fitted for minesweeping as well as laying. Other particulars unreported.

Six of these vessels were originally known as PS-1 to 6 and were attached to the NKVD (the state police, formerly the OGPU, in charge of frontier patrol in time of peace) rather than the Navy. Four Bui type minelayers—*Cheka*, *Kapsul*, *Paravan* and *Veche*—visited Manila in 1937 en route to Vladivostok. They were the first Soviet warships seen in foreign Pacific ports in years.

Older Types

KRASNAYA ABKHASIA, KRASNI AJARISTAN, KRASNI ARMENIA (ex-Krasni Krim), KRASNAYA GRUSIA (all 1916). Standard Displacement: 1,100 tons. Speed: 9 kts. Armament: 2 5.1" (perhaps 3 5.1" in one or more), 2 3" AA, 2 MG. Mine capacity: 248. (Stationed in Black Sea).

YAUSSA, BERESINA, KUBAN (all 1916-17). Displacement: 1,165 tons. Speed: 10 kts. Armament: 2 4", some MG. Mine capacity: 90.

KOPCHIK, PIONER (ex-Korchun) (both 1915). Displacement: 400 tons. Dimensions: 154' x 25' x 10'. Speed: 14 kts. Armament: 2 4", 1 1-pounder AA. Mine capacity: 70.

ex-KERI (ex-Kalev, ex-Russian M-8), ex-VAINDLO (ex-Olev, ex-Russian M-10) (both 1914). Displacement: 50 tons. Dimensions: 68' 6" x 15' x 4'. Propulsion: Two sets gasoline engines. Speed: 9 kts. Armament: 1 57 mm. Both of these vessels are Estonian units taken over by the Soviet navy in 1941.

SPARTAK (ex-Zarnitsa, 1913). Displacement: 250 tons. Dimensions: 132' 9" x 21' 4" x 11'. Speed: 12 kts. Armament: 1 3", 2 MG.

MINER (ex-Yastrebov, ex-Bore, 1913). Displacement: 350 tons. Dimensions: 164' x 23' x 9' 6". Speed: 12 kts. Armament: 2 3", 2 MG. Mine capacity: 70.

ex-RISTNA (ex-Petr), ex-SUUIOP (ex-Pavli) (both 1907). Displacement: 500 tons. Dimensions: 198' 6" x 49' 6" x 6' 6". Propulsion: Paddle wheels, 750 HP. Speed: 12.5 kts. Armament: 1 3", 1 1-pounder AA. Fitted as both sweepers and layers. (Former Lithuanian vessels, taken over 1941).

DEVIATOYE YANVARYA (ex-Volga, 1905). Displacement: 1,711 tons. Dimensions: 229' x 45' x 13'. Speed: 10 kts. Armament, 4 3" (probably AA). Mine capacity: 236.

MARTI (ex-Shtandart, 1895). Standard Displacement: 4,600 tons. Dimensions: 370' w.l. x 52' 6" x 20'. Propulsion: Two screws, two sets geared turbines. Speed: 25 kts. Armament: 4 5.1"/55; 6 37 mm AA; possibly several smaller AA. Mine capacity: 300. Deck protected by 2" armor; carries one seaplane. The Marti is the former Imperial yacht. She was thoroughly reconstructed at Leningrad in 1935-37. She was not only given heavy armament, but was re-engined with thoroughly modern turbines. For all her age, she is an extremely useful vessel and one of the most powerful minelayers in the world.

PERVOYE MAYA (ex-Dunai, 1891). Standard Displacement: 1,620 tons. Dimensions: 203' 4" x 32' 8" x 14' 9". Speed: 10 kts. Armament: 3 3", 2 MG. Mine capacity: 250. (May have been deleted from Soviet navy list).

DVADSATPYATAVO OKTIA8RYA (ex-Narova, ex-General Admiral, 1873). Displacement: 4,250 tons. Dimensions: 284' 6" x 48' x 22'. Speed: 9 kts. Armament: 4 3", 4 MG. Mine capacity: 600. (Used as minelaying trainer in peacetime; notwithstanding her age, she is probably now active as a regular minelayer).

MINESWEEPERS

MU-40-54 and possibly others (all 1936-37). Displacement: 180 tons. Diesel-driven. 12 kts. 1 MG. Employed on training duties in peacetime.

N-1-6 (all 1934-36). Displacement: 200 tons. Diesel-driven. 16 kts. 1 3-pounder, 1 MG.

ex-VESTURS, ex-IMANTA (both 1926). Built in France. Displacement: 255 tons. 160' x 21' x 5'. Two screws, two sets reciprocating engines, 750 HP. 14 kts. 1 3" AA, 4 MG. Also carry 30 mines. (Former Lithuanian vessels, taken over 1941).

JALITA (1926). Displacement: 359 tons. 2 3" AA. In Black Sea. No other particulars known.

DOROTEA (1924). Displacement: 443 tons. 2 3" AA. In Black Sea. No other particulars known.

TAKHONA (1919). Displacement: 45 tons. 57' 6" x 10' 6" x 5' 6". 12 kts. Armament unreported.

STEFA, SUM8A and others. Ex-Norwegian whalers transferred to USSR in 1942 for employment as minesweepers. Possibly renamed.

NIEVOD, YAKOR (both 1916). Built in Norway. Ex-whalers. Displacement: 400 tons. 11 kts. 2 3", 1 37 mm AA.

KRAM8OL, ZMEYA (both 1916). Displacement: 185 tons. 11 kts. 1 3".

KLIUZ, UDARNIK (both 1916). Displacement: 268 tons. 147' 8" x 20' 4" x 6' 6". Reciprocating engines, 450 HP. 12 kts. 1 3", 2 MG.

MIKULA (1914). Ex-tug. Displacement: 300 tons. 10 kts. 1 3", 2 MG.

UORA (ex-Patron) and another (ex-Plamya) (1913-14). Built in England. Displacement: 500 tons. 146' x 24' 6" x 10'. 11 kts. 2 3".

DOZORNI, RAZVYEDCHIK (both 1904). Displacement: 100 tons. 15 kts. 1 37 mm AA, 1 MG.

RIVER GUNBOATS

During the siege of Stalingrad and in other actions, Russian forces have made extensive use of river gunboats. These vessels, many of which were Army rather than Navy manned, frequently mount guns of extraordinarily heavy caliber for shallow draft river craft. The Soviet fleet on the Amur River (boundary between Siberia and Japanese-occupied Manchuria) likewise includes many vessels with much heavier armament than is normally mounted on gunboats. Soviet river gunboats are meant for real fighting, not colonial policing. They therefore hark back to the heavy gunboats Union forces employed in the American Civil War rather than to most contemporary vessels of the same designation. The list of Russian river gunboats below is far from complete.

600-ton Type

Two or more river gunboats were reported under construction in 1941, presumably for service on the Prut, the 1941 boundary between the Soviet Union and Rumania.

6-inch Gun Type

Stills from the Soviet motion picture, *On the Danube*, show a river vessel with two guns (each enclosed in a separate turret superposed forward) of at least six inches in caliber. Doubtless any such vessels in the Prut flotilla were withdrawn and joined the defense of Stalingrad.

Motor Type

Among the river craft employed by the Russians at Stalingrad were a number of armored motor boats mounting a gun of at least 3 inches caliber in a tank-type turret and an AA machine gun in a cupola atop the turret.

4 Choriok Class

CHORIOK, KUNITZA, LASKA, VIDRA (all 1936-7.) Displacement: 180 tons. 12 kts. 2 3". (Stationed in Caspian; doubtless joined Volga flotilla for battle of Stalingrad).

1,000-ton Type

The Amur flotilla includes a number of 1,000-ton gunboats with main armament of three guns of about 4" or 5" caliber, each housed in its own turret. These vessels have extremely low freeboard and look like "three cheeseboxes on a raft."

5 Lenin Class

LENIN (ex-Shtorm), SUN YAT-SEN (ex-Shkvaf), KRASNIVO8TOK (ex-Viyuga), SVERDLOV (ex-Uragan), CHICHERIN (ex-Vikhr) (all 1910). Displacement: 950 tons. 233' x 42' x 4' 6". Diesel-driven, 1,000 HP. 11 kts. 2 4.7" in twin turret (with 4.5" armor), 6 MG. (Amur flotilla).

2 Krasni Azerbaijan Class

KRASNI AZERBAIJAN (ex-Trotsky, ex-Ardagan), LENIN (ex-Kars) (both 1909). Displacement: 630 tons. Diesel-driven, 1,000 HP. 11 kts. 2 4.7", 2 4", 4 MG. (Stationed in Caspian).

4 Krasnoye Znamya Class

KRASNOYE ZNAMYA (ex-Sibiriak), 81EDNOTA (ex-Vogul), PROLETARI (ex-Buriat), RABOTCHI (ex-Kalmuk) (all 1907). Displacement: 190 tons. 164' x 27' x 2'. 11 kts. 2 4.7", 2 MG. (Amur flotilla).

MISCELLANEOUS PATROL CRAFT

Martinov Class: MARTINOV (ex-Vnushitelni), ARTEMIEV (ex-Vinostlivi), OSSOAVIAKHIM (ex-Vnimatelni), ROSHAL (ex-Dmitriev), SHEMSHUSHNI (ex-Sveriev) (all 1905). Standard Displacement: 375 tons. 210' x 24' x 8' 3". 15 kts. 2 3", 4 MG; also fitted to carry mines. (The Martinovs are German-built torpedo boats with their tubes removed).

KREPKI (1905). Built in France. Displacement: 324 tons. 185' x 21' x 7'. 20 kts. 1 3", 5 3-pounder, 2 MG. (An old torpedo boat, with tubes removed, last reported serving as a patrol vessel on Lake Ladoga).

ex-LAINE (ex-Sputnik, 1915). 400 tons. 12 kts. 2 75 mm (possibly replaced by guns of standard Soviet caliber). The Laine was among the vessels taken over when the Baltic countries were absorbed by Russia.

ex-MARDUS. 80 tons. 11 kts. 2 3", 2 MG. (Taken over by Soviet navy, 1941).

ICEBREAKERS

Agencies of the Soviet government, particularly the Administration of the Northern Sea Route, collectively operate more icebreakers than all other countries of the world together—a fleet stated to have numbered 40 vessels in 1940 and since increased by the completion of

several new units. Owing to the Russians' great experience, Soviet icebreakers are generally the most advanced in design. Consequently their specifications are presented here in some detail.

In general, icebreakers are extremely beamy, the length-to-width ratio averaging only five or six to one. Bows slope on the underside to permit vessels to ride up on ice, crushing it with their weight. Icebreakers have especially thick plating and heavy framing and scantlings to resist ice pressure. Thanks to such reinforcement, many Soviet icebreakers have been able to survive an entire winter in the ice. In addition, icebreakers have unusually tall funnels, to carry smoke away from the ship during icebreaking operations, during which, of course, the vessel moves very slowly.

Recently-built Soviet icebreakers incorporate several other distinctive features as well. Many of them are equipped with a bow propeller to increase maneuverability and traction in ice-confined spaces and also to draw water from under ice forward of the ship, robbing the ice of support and enabling it to be crushed more easily. The bow propeller was first tried in the *Yermak*, forty-five years old but still in service, the first genuine icebreaker ever built. The *Yermak's* bow propeller, however, became clogged by ice too easily and was removed. The difficulty of ice clogging was not overcome until a few years ago. Modern Soviet 'breakers are also radio-compass equipped, radio direction finding being a much more reliable method of navigation in high latitudes than the magnetic compass or most other navigation instruments. One of the Khabarov or Stalin class vessels is also fitted with bow jets which eject "needles" of live steam under high pressure. High pressure steam effectively weakens ice, enabling much faster movement for the breaker. Soviet icebreaker designers indicate that steam "needles" will become a standard feature of postwar ice vessels.

Modern Soviet icebreakers also carry planes and a catapult. The Russians have found that scouting planes (equipped in the north with skis, of course) can frequently find passages through drift ice or weak points in solid ice invisible from shipboard. Thus planes play an integral part in modern ice navigation. Just before the war, in fact, partly by means of planes, Soviet icebreakers achieved the age-old dream of forcing the Northeast Passage from Europe to Asia—from Murmansk along the top of the USSR around to the Bering Sea and Vladivostok. Since 1939, several convoys of merchant vessels, shepherded by powerful 'breakers, have made the trip in a single summer season, bringing to Arctic outposts needed supplies and bringing out lumber and other products from the roadless, but rich, interior of Siberia. Some of these commodities have found their way to the U. S. and Great Britain as well as to non-Arctic Russia and have doubtless played a part in the common defense against the Axis. Russian Arctic experts believe that the combination of planes and new and more powerful icebreakers will make year-round navigation of the Northeast Passage possible after the war.

Soviet icebreakers are all heavily armed in wartime (their decks are generally built with specially reinforced areas for emergency mounting of guns) and now not only keep open vital ports, but are employed on general escort duties in seasons of open navigation and at all times take part in port AA defense. The list of 'breakers which follows is not complete; small vessels not specifically built to serve as 'breakers but with added anti-ice features are omitted. Many Soviet vessels, of course, are strengthened for ice navigation.

Projected 24,000-ton Type

In 1940, the magazine *Soviet Arctic* published designs for a 24,000-ton (displacement) type of icebreaker, the largest and most powerful ever conceived. These vessels will be equipped with all the features described above and will be able to break seven-foot ice, the thickest sea ice commonly encountered. Hence they will be able to navigate even during the Arctic winter. It was indicated that construction of at least one of them was to begin shortly. Work has probably been abandoned for the duration, but will doubtless be resumed after the war, for the Administration of the Northern Sea Route, sponsors of the design, generally secure authorization for whatever they need. The vessels are to have Diesel-electric drive of 50,000 HP, and will have a cruising radius of 10,000 miles.

3 Khabarov Class

KASAK Khabarov, SERGEI KIROV, VALERIAN KUIBYSHEV (all 1938-40). Built at Leningrad. Displacement: 12,000 tons. Dimensions: 357' 6" x 69' 3" x 27' 6". Propulsion: Three screws (two stern, one bow), Diesels driving electric motors, 12,000 HP. Speed unreported. Planes: 2.

1 or more Orjonikidze Class

SERGEI ORJONIKIDZE (1938 or 1939) and possibly others. Launched at Gorki on Upper Volga, completed at Baku. Specifications unreported. The *Sergei Orjonikidze*, which is probably stationed in the Caspian, whose northern ports such as Astrakhan are ice-bound in winter months despite their low latitude, is a fire and salvage as well as icebreaking tug of powerful dimensions. Photos indicate a displacement well in excess of 1,000 tons.

Photo Page 157

4 Stalin Class

Photo Page 157

JOSEF STALIN, LAZAR KAGANOVICH (both 1937); VIACHESLAV MOLOTOV (1939); OTTO SCHMIDT (projected). *Stalin* and *Molotov* built at Leningrad, *Kaganovich* at Nikolaev. Displacement: 11,000 tons. Dimensions: 351' x 75' 6" x 22'. Propulsion: Three screws (two stern, one bow), three sets reciprocating engines, with Diesel-electric unit for cruising; total HP, 10,050. Speed: 15.5 kts. Planes: 3. Catapults: 1.

The Nazi claim to have sunk the *Stalin* at Archangel has never been substantiated. She may have been damaged, however, during air raids on Archangel in the fall of 1941. The *Kaganovich* is in the Far East. The *Schmidt* was to have been built at Nikolaev; if she was actually started, which is doubtful, her uncompleted hull must have been wrecked by the Russians before they evacuated Nikolaev. Prof. Otto Schmidt is the head of the Administration of the Northern Sea Route and principal organizer of the colossal Soviet effort to open up the Arctic.

3 Sibiriakoff Class

ALEXANDER SIBIRIAKOFF (ex-*Bellaventure*), GEORGEI SEDOFF (ex-*Beothic*), VLADIMIR RUSSANOFF (ex-*Bonaventure*) (all 1909). Built in England. Displacement: 1,300 tons. Dimensions: 240' 6" x 36' x 16' 6". Propulsion: Reciprocating engines, single screw, 2,000 HP. Speed: 13.5 kts.

In 1939, the *Sedoff* set the all-time record for latitude reached by a ship, in the course of an ice-bound drift northward.

Other Types

Photo Page 157

MURMAN (1937). Displacement: 1,400 tons. Speed: 15 kts. (Sometimes rated as a surveying ship). No other details available. (The *Murman* was one of the Soviet vessels which rescued Dr. Ivan Papanin and his three companions after their epoch-making eight-month drift on an ice floe).

ex-KRISJANIS VALDEMARS (1925). Built in England. Displacement: 2,800 tons. Dimensions: 196' 6" x 55' 8" x 22'. Propulsion: Coal-burning reciprocating engines, 5,200 HP. Speed: 15 kts. (Acquired in 1941 in occupation of Baltic territories; new name unreported).

KRASSIN (ex-*Sviatogor*, 1917). Built in England. Displacement: 8,700 tons. Dimensions: 323' 3" x 71' x 26'. Propulsion: Three sets coal-burning reciprocating engines, 10,000 HP. Speed: 15 kts. The *Krassin* has played a prominent part in recent explorations of the Arctic.

LENIN (ex-*Alexander Nevski*, 1917). Built in England. Displacement: 5,600 tons. Dimensions: 281' x 64' x 19'. Propulsion: Three screws, three sets reciprocating engines, 8,000 HP. Speed: 19 kts. Stationed in Arctic.

STEFAN MAKAROFF (ex-*Kniaz Pojarski*, 1916). Built in England. Standard Displacement: 3,150 tons. Dimensions: 248' x 57' x 22'. Propulsion: Three screws, three sets coal-burning reciprocating engines, 6,400 HP. Speed: 14.5 kts. Stationed in Black Sea and Sea of Azov.

DOBRINA NIKITICH (1916). Built in England. Standard Displacement: 2,460 tons. Dimensions: 211' x 50' 6" x 20'. Propulsion: Two screws, coal-fired reciprocating engines, 4,000 HP. Speed: 14 kts. Stationed in Far East. May have been renamed.

ex-SUUR TOLL (ex-*Vainamoinen*, ex-*Volhynetz*, ex-*Tsar Mikhail Feodorovich*, 1914). Displacement: 3,622 tons. Dimensions: 236' 6" x 57' x 18' 9". Propulsion: Reciprocating engines, 4,500 HP. Speed: 13.5 kts. (Acquired in 1941 in Russian expansion into Baltic).

SADKO (ex-*Lintrose*, 1913). Built in England. Displacement: 2,000 tons. Dimensions: 255' x 37' 6" x 21'. Propulsion: Single screw, reciprocating engines, 3,500 HP. Speed: 14 kts. Stationed in Arctic. The *Sadko* was sunk off the coast of Russia during the last war and raised and refitted many years later by the Soviet government.

MALYGIN (ex-*Solovei Budimirovich*, ex-*Bruce*, 1912). Built in England. Displacement: 2,200 tons. Dimensions: 250' 6" x 36' x 17' 6". Propulsion: One screw, reciprocating engines, 3,000 HP. Speed: 15 kts. One of the most prominent vessels in Soviet Arctic exploration work.

FEODOR LITKE (ex-*Kanada*, ex-*Earl Gray*, 1909). Displacement: 3,400 tons. Dimensions: 265' x 47' 6" x 17' 9". Propulsion: Two screws, reciprocating engines, 6,000 HP. Speed: 17 kts. Stationed in Baltic.



*Wheeler
Come a Day*

WHEELER

TAIMYR (1909). Displacement: 1,290 tons. Speed: 10.5 kts. Carries one plane. The *Taimyr* and *Murman* (above) were the vessels which brought Dr. Papanin and three companions back to Russia after eight months on an ice floe.

ex-MONTCALM (1904). Built in England. Displacement: 3,270 tons. Dimensions: 245' x 40' 6" x 15' 9". Propulsion: Coal-fired reciprocating engines, 3,600 HP. Speed: 14 kts. Transferred from Canadian government fleet to USSR in 1942.

YERMAK (1898). Built in England. Displacement: 7,875 tons. Dimensions: 305' x 71' x 25'. Propulsion: Two screws, coal-fired reciprocating engines, 7,000 HP. Speed: 15 kts. The *Yermak* is perhaps the most famous of all icebreakers. She was the first vessel specially designed for heavy icebreaking duties. Although built in England, she is Russian in design, her original Russian backers having to abandon their project for lack of funds. She originally had a bow propeller in addition to her two stern screws, to aid her in ice-breaking (see general introductory note on Soviet icebreakers); it was subsequently removed, because of ice-clogging difficulties which remained unsolved for many years. She is normally stationed in the Baltic but has been active in Arctic exploration work as well.

DAVIDOFF (ex-*Krasni Oktiabr*, ex-*Nadiejni*, 1897). Built in Germany. Displacement: 1,525 tons. Dimensions: 184' x 43'; draft unreported. Propulsion: Reciprocating engines, 2,200 HP. Speed: 13 kts. Stationed in Far East; as *Krasni Oktiabr*, the *Davidoff* made a famous voyage to Wrangell Island in 1922, asserting the Soviet claim to that Arctic island.

TRUVOR (ex-*Slepnor*, 1896). Built in Germany. Displacement: 1,459 tons. Dimensions: 165' x 40'; draft unreported. Propulsion: Reciprocating engines, 1,900 HP. Speed: 13 kts. Stationed in Baltic.

TRAINING SHIPS

Photo Page 151

SVIR (ex-Dutch liner *Patria*, 1919). 9,686 tons gross. 4 37 mm AA.

AURORA (ex-S.S.S.R., ex-*Aurora*, 1900). Ex-cruiser. Displacement: 5,622 tons. 416' x 55' x 21'. 17 kts. Armament: 10 5.1", 6 3", 2 47 mm, 4 MG; fitted for minelaying. (May now be used as AA ship or minelayer at Leningrad).

KOMSOMOLETZ (ex-*Okean*, 1902). Displacement: 11,900 tons. 4 3-pounder AA.

LENINGRADSKI SOVIET (ex-*Vierny*, 1895). Displacement: 1,280 tons. Light armament. Navigation training ship.

TREVOLEV (ex-*Vain*, 1893). Displacement: 1,289 tons. 4 3-pounder AA. Sea-going submarine training headquarters.

POLARNAYA SVIEZDA (1890). Displacement: 3,640 tons. 3 37 mm AA. Training ship for engine room crews.

MISCELLANEOUS

Photo Page 151

ASTRONOM (1918). 300 tons. Surveying vessel. Sister of *Kompass* and *Sekstant*.

GORNYAK (ex-*Tatiana*, 1898). 1,575 tons. Oiler.

HIDROGRAFS (ex-*Weichsel*, 1918). Built in Danzig. 600 tons. 10 kts. Surveying vessel.

KOMMUNA (ex-*Volkhov*, 1913). 2,400 tons. Diesel engines, 10 kts. Submarine tender and salvage ship.

KOMPASS (1918). 300 tons. Surveying vessel. Sister of *Astronom* and *Sekstant*.

KRASNI GORN (ex-*Kama*, 1911). 1,982 tons. 10 kts. Repair ship.

KRASNI KOMANDIR (ex-*General Brusilov*). No particulars available.

KRASNI KUBANETZ (ex-*Kubanetz*, 1887). Displacement: 1,225 tons. Tender, possibly to MTBs or submarines.

METALLIST (ex-*Tamara*, 1898). 1,530 tons. 10 kts. Oiler. (Possibly lost).

OKEAN, OKHOTSK (1938). 1,500 tons. 15 kts. Surveying vessels.

SEKSTANT (1918). 300 tons. Surveying vessel. Sister of *Astronom* and *Kompass*.

SERP-I-MOLOT (ex-*Angara*, 1900). 5,920 tons. 12 kts. Repair vessel.

SMOLNY (ex-*Tosno*, 1907). Built in England. 3,200 tons. 10 kts. 4 3-pounder AA. Submarine tender.

ex-VARONIS (1908). Displacement: 250 tons. Acquired 1941. Originally an icebreaker. Present classification not reported.

VOLODEI I (1907). 730 tons. 9.5 kts. Water carrier.

VOLODEI II (1905). 660 tons. 9.5 kts. Water carrier.

ZHELESNOROSHNIK. 2,000 tons. 10 kts. Oiler.

1 ship, a new MT8 tender, name unreported. In Black Sea.

U. S. S. R. - AIRCRAFT CARRIERS

2 Krasnoye Znamya Class

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------------|--------------|-----------|----------|-------|
| KRASNOYE ZNAMYA | Putlov Works | 1939 | | |
| VOROSHILOV | Putlov Works | 1940 | | |

Standard Displacement: 12,000 tons.

Dimensions unreported.

Propulsions: Geared turbines.

Speed: 30 kts.

Plane Capacity: 40.

Armament: 12 4" AA.

Armor: thin belt.

So far as is known, neither of these carriers has been launched, and construction has probably been suspended. In design, they are said to resemble the U.S.S. *Ranger*.

1 Stalin Class

| Name | Builder | Keel Laid | Launched | Comp. |
|--|-----------|-----------|----------|-------|
| STALIN (ex- <i>Admiral Kornilov</i>) | Nikolaiev | 1914 | 10/4/37 | 1939 |

Standard Displacement: 9,000 tons.

Dimensions unreported.

Propulsion: Geared turbines.

Speed: 30 kts.

Plane Capacity: about 20.

Armament unreported.

Armor unreported.

The *Stalin* was begun as a cruiser. Construction was suspended after the October Revolution and was not resumed until 1929, when she was converted to her present function. The *Stalin*, however, has not been reported in action. She may prove to be only a seaplane carrier.

U. S. S. R. - AIRCRAFT AUXILIARIES

In addition to the above-mentioned *Stalin*, which may prove to be a seaplane carrier instead of a "flat top," *Krasni Moryak* has been reported as the name of a seaplane carrier reputedly in current service. The *Krasni Moryak* is said to have been laid down in 1916 and to have a capacity of 12 seaplanes.

As NAVY YEARBOOK went to press, a dispatch in the New York papers, describing a cruise aboard a French man-of-war formerly laid up at Alexandria, made it evident that Admiral Godfroy's fleet had joined the Allies and was being recommissioned for service at sea. It may be assumed, therefore, that by the spring of 1944, most of these vessels will be back in action. Vessels marked (A) are in Allied hands.

FRANCE - BATTLESHIPS

3 Richelieu Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------|----------------|-----------|----------|-------|
| (A) RICHELIEU | Brest | 10/22/35 | 1/17/39 | 4/40 |
| (A) JEAN BART | Penhoet, Loire | 1/ 1/37 | 3/ 6/40 | |
| CLEMENCEAU | Brest | 1/17/39 | | |

Standard Displacement: 35,000 tons.

Dimensions: 794' x 108' 7" x 26' 6".

Propulsion: Four screws, four sets geared turbines, 155,000 SHP. Speed: Over 30 kts.

Armament: As planned (*Richelieu* possibly rearmed with American weapons, probably so rearmed in smaller calibers), 8 15" in quadruple turrets forward; 15 6" in triple turrets; 12 37 mm AA in twin gunhouses; 24 13 mm AA in quadruple mounts. Armor: 9"-16" belt; decks totaling 8". Planes: 4. Catapults: 2.

The *Richelieu* is the only ship of this class actually finished. The *Jean Bart*, only partially armed, was towed to Casablanca when France collapsed; she was sunk by U. S. naval gunfire during the American landing in November, 1942; she was raised in May, 1943, however, and her repair and completion at a subsequent date are not impossible. The *Clemenceau* was blown up on the stocks before the Nazi flood tide poured over Brest. When France surrendered, the *Richelieu* proceeded to Dakar, remaining there under the control of Vichy authorities until French West Africa came over to the Allied side after the Anglo-American occupation of North Africa. The *Richelieu* was immobilized by British depth charges (exploded against her stern by daring volunteer motorboat crews) and naval aircraft torpedoes on July 8, 1940. She was brought to the U. S. in 1942-3 and repaired at the Brooklyn Navy Yard. She is now the principal unit in the navy of the French National Committee of Liberation. The *Richelieu* class' unusual arrangement of armament was intended to make them uniform with the *Strasbourg* and *Dunkerque* as well as to concentrate the area requiring the heaviest protection. The total weight of her armor is 15,000 tons; hence protected areas are extraordinarily well shielded. There is an internal armored partition in the quadruple turrets; each quadruple turret is really two twin turrets with a single wall between them, like the "party wall" houses that used to be built in New York. *Richelieu* and *Bart* were built in dry docks and floated instead of launched.

2 Dunkerque Class

Photo Page 161

| Name | Builder | Keel Laid | Launched | Comp. |
|------------|---------|-----------|----------|-------|
| DUNKERQUE | Brest | 12/26/32 | 10/ 2/35 | 4/37 |
| STRASBOURG | Penhoet | 11/25/34 | 12/12/36 | 12/38 |

Standard Displacement: 26,500 tons.

Dimensions: 702' x 101' 9" x 28'.

Propulsion: Four screws, four sets geared turbines, 100,000 SHP. Speed: 29.5 kts.

Armament: 8 13" in quadruple turrets forward; 16 5.1 DP, twelve in quadruple turrets astern, four in twin turrets amidships; 4 47 mm AA; 8 37 mm AA; 32 13 mm AA. Armor: 9"-11" belt; 14" turrets; decks totaling 7". Planes: 4. Catapults: 1.

The *Dunkerque* and *Strasbourg*, which were scuttled in shallow water and flooded in drydock, respectively, at Toulon in the "mass suicide" of the French fleet on Nov. 27, 1942, but are still listed as they are capable of salvage, were built as replies to the German "pocket battleships." They were the first vessels of genuine capital ship caliber capable of cruiser speed, hence the only capital ships of their time able to outgun and outspeed the *Graf Spee* and her sisters. In turn, the *Dunkerque* and *Strasbourg* "provoked" the *Scharnhorst* and *Gneisenau*. The unusual arrangement of guns was resorted to in order to reduce the area over which the heaviest armor has to be spread (the two main turrets are widely separated, however, to reduce risk of damage to entire main battery and cut down blast effect when firing

straight ahead). Even so, *Strasbourg* and *Dunkerque* set a record—for their time—for percentage of weight allotted to armor. (Total weight of their armor: over 10,000 tons). The 13" guns with which they are armed are capable of firing three rounds a minute, an unusually rapid rate. The *Dunkerque* was shelled, fired and beached in the Anglo-French Battle of Mers-el-Kebir, July 3, 1940. She was later partly repaired and made her way to Toulon for refit; she was very nearly ready for sea again when her crew scuttled her. The *Strasbourg* was also hit by a British naval torpedo plane in the Mers-el-Kebir engagement, but was able to escape to Toulon.

1 Lorraine Class

Photo Page 161

| Name | Builder | Keel Laid | Launched | Comp. |
|--------------|---------|-----------|----------|-------|
| (A) LORRAINE | Penhoet | 11/12 | 9/30/13 | 7/16 |

Standard Displacement: 22,189 tons.

Dimensions: 544' 6" x 88' 6" x 32' max.

Propulsion: Four screws, four sets geared turbines, 43,000 SHP. Speed: 21 kts.

Armament: 8 13.4" in twin turrets; 14 5.5"/55 in sideports; 8 3.9"/60 AA in twin gunhouses; 6 47 mm AA; 8 MG. Armor: 7"-10.75" belt; 10"-17" turrets; 3.5" deck. Planes: 4. Catapults: 1.

The *Lorraine* and *Provence*, below, are sisters, but are listed separately because the *Lorraine* was modernized in 1934-35 and now differs from the only partly modernized *Provence* in many important respects. The amidships turret of the *Lorraine*, which when last reported was demilitarized at Alexandria although negotiations for her coming over to the Allied side were under way, was removed in favor of a catapult; heavier AA guns were mounted and twinned; new engines were installed, torpedo tubes removed, and other changes made. The *Lorraine* was originally a coal-burner. A sister ship, *Bretagne*, was set afire by British gunfire at Mers-el-Kebir in 1940 and capsized.

1 Provence Class

Photo Page 161

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|----------|-----------|----------|-------|
| PROVENCE | La Seyne | 6/12 | 4/20/13 | 6/15 |

Standard Displacement: 22,189 tons.

Dimensions: 544' 6" x 88' 6" x 32' max.

Propulsion: Four screws, four sets geared turbines, 43,000 SHP. Speed: 21 kts.

Armament: 10 13.4"/45 in twin turrets; 14 5.5"/55 in sideports; 8 3"/60 AA; 7 47 mm AA; 16 13 mm AA. Armor: 7"-10.75" belt; 10"-17" turrets; decks totaling 3". Planes: 0. Catapults: 0.

The *Provence* was severely damaged at Mers-el-Kebir, July 3, 1940, but partly repaired and taken to Toulon, there to be flooded and sunk by the stern in French fleet's "mass suicide" on Nov. 27, 1942 (but she is still salvageable). The *Provence* is a sister of the *Lorraine*, although she has not received the benefit of extensive modernization. The only important changes made in her since the last war are her conversion from coal to oil; improvement of her AA batteries in the mid-twenties; and removal of torpedo tubes. An unusual feature of the *Provence* and *Lorraine* is the variation in turret armor thickness; even the faces vary, being thickest around the gun ports.

2 Courbet Class

Photo Page 161

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------|----------|-----------|----------|-------|
| (A) COURBET | Lorient | 9/10 | 9/23/11 | 9/13 |
| (A) PARIS | La Seyne | 11/11 | 9/28/12 | 8/14 |

Standard Displacement: 22,189 tons.

Dimensions: 551' x 92' 4" x 32' 6" max.

Propulsion: Four screws, four sets geared turbines, 43,000 SHP. Speed: 20 kts.

Armament: 12 12"/45 in twin turrets; 22 5.5"/55 in sideports; 7 3" AA; 2 47 mm AA; 4 18" TT. Armor: 7"-10.75" belt; 12.5" turrets; 2.75" deck. Planes: 0. Catapults: 0.

The *Courbet* and *Paris*, the oldest capital ships in the French fleet, were operating with British Atlantic squadrons at the time of France's collapse, hence have been in British hands since then. Whether they have been turned over to the Fighting French (now the French National Committee of Liberation) and are in action is not known. The *Courbet* and *Paris*, originally coal burners, were re-engined with modern oil-burning equipment in the 'thirties.

FRANCE - CRUISERS

1 Algérie Class

Photo Page 162

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|---------|-----------|----------|-------|
| ALGÉRIE | Brest | 3/13/31 | 5/21/32 | 1934 |

Standard Displacement: 10,000 tons. Dimensions: 617' x 65' 8" x 24' max.

Propulsion: Four screws, four sets geared turbines, 84,000 SHP. Speed: 31 kts.

Armament: 8 8" in twin turrets; 12 3.9" AA in twin gunhouses; 8 37 mm AA; 16 13 mm AA. 6 21.7" TT in triple mounts. Armor: 4.5" belt; 3" deck. Planes: 3. Catapults: 2.

The *Algérie* is one of the vessels that was scuttled in shallow water at Toulon in the mass suicide of the French fleet, but she was not damaged beyond repair. She is an interesting vessel in many respects, being the first heavy French cruiser to stress protection rather than extreme speed. She is comparable to U. S. heavy cruisers of the Minneapolis type rather than to earlier French heavies. She was built as a reply to the Italian Gorizia type. The *Algérie's* catapults are explosive-powered, the first such in the French navy.

4 Suffren Class

Photo Page 162

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------|---------|-----------|----------|-------|
| (A) SUFFREN | Brest | 5/26 | 5/ 3/27 | 1930 |
| COLBERT | Brest | 6/27 | 4/20/28 | 1931 |
| FOCH | Brest | 6/28 | 4/24/29 | 1931 |
| DUPLEIX | Brest | 10/29 | 10/ 9/30 | 1932 |

Standard Displacement: 9,938 tons. Dimensions: 643' (*Suffren*), 636' 6" (*Dupleix*), 637' (others) x 65' 8" (*Suffren*), 63' 6" (others) x 24' 6" max.

Propulsion: Three screws, three sets geared turbines, 90,000 SHP. Speed: 31.3 to 32.5 kts.

Armament: 8 8" in twin turrets; 8 3" AA (*Suffren*), 8 3.5" AA (others) in twin gunhouses; 6 37 mm AA (*Suffren* 8 37 mm AA); 16 MG. 6 21.7" TT in triple mounts. Armor: Thin patch over boiler and engine spaces. Planes: 2 (*Suffren*), 3 (others). Catapults: 2.

These are the last French heavy cruisers of the lightly armored type, the trend toward sacrificing speed in favor of armor already manifesting itself. They are similar to the *Tourville* type, with the exception of having two knots of speed less and considerably more armor (although armor protection is still slight). The *Suffren* was last reported demilitarized at Alexandria. The other three vessels were scuttled in shallow water at Toulon and, although partly disabled, are salvageable.

2 Tourville Class

Photo Page 163

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------|---------|-----------|----------|-------|
| (A) TOURVILLE | Lorient | 4/14/25 | 8/24/26 | 1928 |
| (A) DUQUESNE | Brest | 10/30/24 | 12/17/25 | 1928 |

Standard Displacement: 10,000 tons. Dimensions: 626' 8" x 62' 4" x 23' max.

Propulsion: Four screws, four sets geared turbines, 120,000 SHP. Speed: 33 kts.

Armament: 8 8" in twin turrets; 8 3" AA; 8 37 mm AA; 12 13 mm AA. 6 21.7" TT in triple mounts. Armor: Practically none, except on gunhouses and conning tower. Planes: 2. Catapults: 1.

The *Duquesne* and *Tourville*, which were last reported laid up at Alexandria, carry the "treaty tinclad" idea to its logical and absurd conclusion. These vessels are practically devoid of armor and in many respects are really only colossal destroyers. As war experience has abundantly proved, such craft are of little use in battle.

2 De Grasse Class

| Name | Builder | Keel Laid | Launched | Comp. |
|----------------|-------------|-----------|----------|-------|
| DE GRASSE | Lorient | 11/38 | | |
| CHATEAURENAULT | F & C, Med. | 1942? | | |

Standard Displacement: 8,000 tons.

Dimensions unreported.

Propulsion: Four screws, four sets geared turbines.

Speed: 34 kts.

Armament: 9 6" in triple turrets; 6 3.5" AA in twin gunhouses aft; 8 13 mm AA. Unreported number of 21.7" TT. Armor: probably similar to *La Galissonnière* type. Planes: 4. Catapults: 2.

The hull of the *De Grasse* was blown up while still on the stocks at Lorient in 1942 to prevent her capture by the Nazis. At that time the *Chateaufrenault*, which was to have been begun in 1940, was still unstarted. However, it is reported that she was begun in 1942 by the Vichy government. A third vessel of the same type, *Guichen*, was never started.

6 La Galissonnière Class

Photo Page 163

| Name | Builder | Keel Laid | Launched | Comp. |
|--|---------------|-----------|----------|----------|
| LA GALISSONNIÈRE | Brest | 10/27/31 | 11/17/33 | 12/31/35 |
| MARSEILLAISE | A. C. Loire | 1933 | 6/17/35 | 10/25/37 |
| JEAN DE VIENNE | Lorient | 12/31 | 7/31/35 | 4/15/37 |
| (A) GLOIRE | F. C. Gironde | 12/31 | 9/28/35 | 12/ 4/37 |
| (A) MONTCALM | F. C. Med. | 1933 | 10/26/35 | 12/ 4/37 |
| (A) GEORGES LEYGUES (ex- <i>Chateaufrenault</i>) | Penhoet | 1933 | 3/24/36 | 12/ 4/37 |

Standard Displacement: 7,600 tons.

Dimensions: 580' 9" x 57' 4" x 17' 4" max.

Propulsion: Two screws, two sets geared turbines, 84,000 SHP.

Speed: 31 kts.

Armament: 9 6" in triple turrets; 8 3.5" AA in twin gunhouses; 8 13 mm AA. 4 21.7" TT in twin mounts. Armor: 3"-4.75" belt; 5.5" turret faces; 2.67" deck. Planes: 4. Catapults: 1.

The three *Galisonnières* not marked (A) were at Toulon in 1942 when the French fleet committed suicide, and one or more of them appear to have been scuttled in shallow water, but none is beyond repair. The scuttled unit was refloated by the Nazis and has since been damaged by Allied bombs. The other three *Galisonnières* were at Dakar when French West Africa came over to the Allied side. *Montcalm* accompanied the *Richelieu* when latter came to U. S. in 1943 for refit and was herself refitted at Philadelphia Navy Yard. Present Allied disposition of *Gloire* and *Georges Leygues* unknown. *La Galissonnière* design is based on *Emile Bertin*.

3 Duguay-Trouin Class

Photo Page 165

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------------|---------|-----------|----------|----------|
| (A) DUGUAY-TROUIN | Brest | 8/ 4/22 | 8/14/23 | 9/10/26 |
| LAMOTTE-PICQUET | Lorient | 1/17/23 | 3/21/24 | 9/ 1/26 |
| (A) PRIMAGUET | Brest | 8/10/23 | 5/21/24 | 10/ 1/26 |

Standard Displacement: 7,249 tons.

Dimensions: 594' 9" x 57' 6" x 17' 3".

Propulsion: Four screws, four sets geared turbines, 102,000 SHP. Speed: 33 kts.

Armament: 8 6.1"/50 in twin gunhouses; 4 3" AA; 7 smaller, including 4 MG. 12 21.7" TT in triple mounts. Armor: Practically none except for thin deck armor, gunshield plating and conning tower. Planes: 1. Catapults: 1.

The 6.1" main armament guns of the *Duguay-Trouin*s, unusual armament for French cruisers, are a French Army caliber, adopted to permit uniformity of shell supply with the French Army, as these cruisers served mainly on detached, colonial stations. The *Duguay-Trouin* is one of the ships demilitarized at Alexandria (present status unknown); the *Primaguet* was beached after suffering damage from American gunfire at Casablanca, but is not beyond salvage; and the *Lamotte-Picquet* is in Indo-China, apparently still in the hands of the Vichy French authorities there.

Someewhere North of 'Sixty'



Wartime mariners will remember the Iceland and Murmansk convoy courses somewhere north of "sixty" for their relentless toll of ships and gear. And History will record the splendid work of America's ships in waters all the way from the Arctic to the Tropics.

But in all probability, only ship owners and mariners will remember and appreciate the conversion and repair jobs done "against time" by American shipyards such

as Sullivan's, so vessels could sail on schedule and resist the rigors of wartime service.

Sullivan is prominent among the American shipyards that have contributed to this splendid wartime record. Operators of deep sea and harbor craft have long regarded the name Sullivan as synonymous with the finest type of ship overhaul, repair and conversion service. Thus when ship conditioning is required, experienced marine men "know the score" in advance when they issue the order:

"SEND THE JOB TO SULLIVAN"



MINELAYING CRUISER

1 *Emile Bertin* Class

Photo Pages 164, 165

| Name | Builder | Keel Laid | Launched | Comp. |
|------------------|---------|-----------|----------|-------|
| (A) EMILE BERTIN | Penhoet | 1931 | 5/ 9/33 | 1934 |

Standard Displacement: 5,886 tons. Dimensions: 580' 9" x 51' 9" x 17' 9".

Propulsion: Four screws, four sets geared turbines, 102,000 SHP. Speed: 34 kts.

Armament: 9 6" in triple gunhouses; 4 3.5" AA, two in twin gunhouses, others in single gunhouses; 8 37 mm AA paired; 8 13 mm AA. 6 21.7" TT in triple mounts. Fitted as minelayer, two mine tracks astern; capacity, 200 mines. Armor: 1" 2" deck. Planes: 2. Catapults: 1.

The *Emile Bertin* is still another of the Fort de France, Martinique squadron brought over to the Allied side in 1943 by American pressure. The *Emile Bertin* is unusual in that her mine equipment does not interfere with her performance as an efficient light cruiser; she is a quite successful design.

TRAINING CRUISER

1 *Jeanne d'Arc* Class

| Name | Builder | Keel Laid | Launched | Comp. |
|------------------|---------|-----------|----------|-------|
| (A) JEANNE D'ARC | Penhoet | 1928 | 2/14/30 | 1931 |

Standard Displacement: 6,496 tons. Dimensions: 557' 9" x 57' 6" x 17' 9".

Propulsion: Two screws, two sets geared turbines, 32,500 SHP. Speed: 25 kts.

Armament: 8 6.1"/50 in twin gunhouses; 4 3" AA; 4 37 mm AA paired. 2 21.7" TT in single mounts. Armor: Practically none, except on gunhouses and conning tower. Planes: 2. Catapults: 0.

The *Jeanne d'Arc*, one of Admiral Robert's little squadron tied up at Martinique until the Admiral gave in to American pressure and brought Martinique into the Allied camp, was built for colonial and training service. She has a large cabin amidships, providing accommodations for 156 cadets and 20 instructors, in addition to her normal crew. She is not fast enough for first-line cruiser duties.

FRANCE - DESTROYERS

Needless to say, the confusion which surrounds the status of many units of the French fleet is much worse among destroyers and torpedo boats than among larger combatant vessels. In the fall of 1943, 26 to 35, or perhaps as many as 40, were in the hands of the French National Committee or other Allied authorities. Among them were nine (destroyers *Léopard*, *Le Triomphant*, *Mistral* and *Ouragan*, and torpedo boats *Bouclier*, *La Cordelière*, *La Flore*, *L'Incomprise* and *La Melpomène*) operated by the Fighting French before the Allied occupation of North Africa, which resulted in the capture of many additional warships. French West Africa's adherence to the Allied camp brought the destroyers *Le Terrible* and *La Fantasque*, which were refitted at the Boston Navy Yard in 1943 and are doubtless back in service under the French National Committee's aegis. *Fougueux*, sunk in action with U. S. forces at Casablanca, was raised and repaired (in the U. S., early 1943) and is also presumably back in service. In addition, the Italian navy was reported to have turned back several of 15 vessels (destroyers and other types) taken over from France in 1940; two of these have been identified as the destroyers *Tigre* and *Trombe*, now at sea with the French National Committee fleet. Moreover, in Allied hands are a further 13 identified vessels whose exact status is not clear. (Some were last reported demilitarized, some as about to undergo repair and others as salvable, but action to be taken unstated). They are *Albatros*, *Basque*, *Brestois*, *Forbin*, *La Fortuné*, *L'Alcyon*, *L'Audacieux*, *Le Malin*, *Simoun*, *Tempête*, *Tornade*, *Tramontane* and *Typhon*. Finally, there were reports that four vessels (still unidentified except that they were destroyers or torpedo boats) escaped from Toulon in November, 1942, and joined the Allies. The Fighting French also have three Hunt class destroyers transferred to them by Great Britain. They are listed among French escort craft.

Approximately 30 destroyers and torpedo boats were at Toulon at the time of the French fleet's spectacular "mass suicide" on Nov. 27, 1942. British reconnaissance photos indicate that five or six (three large destroyers and two or three destroyers of standard type or torpedo boats) were not materially damaged. The remainder (except possibly the four reported to have escaped) were scuttled in shallow water. None are stricken from the French navy list, however, not only because their identity is uncertain, but also because none is beyond salvage.

2 *Mogador* Class

VOLTA (1936), MOGADOR (1937). Standard Displacement: 2,884 tons. Dimensions: 451' x 41' x 14' 9". Propulsion: Geared turbines, 90,000 SHP. Speed: 38 kts. Armament: 8 5.5" in twin gunhouses; 4 37 mm AA; 4 13 mm AA; 10 21.7" TT in two triple and two twin mounts; 4 DCT; possibly also fitted to lay mines.

The *Mogador* and *Volta* are the only two to be completed of six projected destroyers of an unusually powerful type begun in France just before the war. The others, which will probably never be built and have therefore been deleted from this list, were to have been named *Desaix*, *Hoche*, *Kléber* and *Marceau*. The *Mogadors* are very nearly light cruisers; the Italian vessels built in reply to them, the 3,362-ton *Attilio Regolo*s, in fact, are classed as light cruisers although their armament is no heavier. The *Mogadors* climax a trend toward constantly heavier destroyers which has been most marked in the French navy (which rates such large craft *contre-torpilleurs*). Besides the *Mogadors*, there are four other types of French destroyers of over 2,000 tons displacement. The *Mogadors*' 5.5-inch guns are semi-automatic, can maintain a rate of fire of 16 rounds a minute and range up to 25,000 yards. The *Mogador* herself was wrecked at Mers-el-Kebir on July 3, 1943, by British gunfire, but was floated and taken to Toulon for repair. Both the *Mogador* and *Volta* were probably at Toulon on "mass suicide" day in 1942.

10 *Le Hardi* Class

CASQUE (1938), FOUDROYANT (ex-*Fleuret*, 1938), L'ADROIT (ex-*Epée*, 1938), LE HARDI (1938), BISON (ex-*Le Filibustier*, 1939), LANSQUENET (1939), MAMELUCK (1939), SIROCCO (ex-*Le Corsaire*, 1939) INTREPIDE (building), TEMÉRAIRE (building). Standard Displacement: 1,772 tons. Dimensions: 333' 6" x 32' 6" x 11'. Propulsion: Geared turbines, 58,000 SHP. Speed: 37 kts. Armament: 6 5.1" in twin gunhouses; 4 37 mm AA; 4 13 mm AA; 7 21.7" TT in one triple and two twin mounts; DCTs.

Eight of these ships, the first standard size destroyers built in France in a decade, were completed either before the collapse of 1940 or shortly thereafter (latter were building in yards on Mediterranean). Originally there were to have been four more, *Aventurier*, *Opiniatre*, *Intrépide* and *Teméraire*, but they had been scarcely started at time of surrender and the first two, to have been built in a yard on the Gironde River in occupied territory, were abandoned. Work was resumed on the last two, building on the Mediterranean, only late in 1942. None of the eight completed units has been reported at any time to be in Allied hands. The four whose names were changed were renamed in honor of vessels lost in action against the Germans prior to June, 1940.

6 *Fantasque* Class

Photo Pages 164, 165

(A) LA TERRIBLE, (A) LE MALIN, L'INDOMPTABLE (all 1933); (A) L'AUDACIEUX, (A) LE FANTASQUE, (A) LE TRIOMPHANT (all 1934). Standard Displacement: 2,569 tons. Dimensions: 434' 4" x 39' 4" x 14'. Propulsion: Two screws, two sets geared turbines, 74,000 SHP. Speed: 37 kts. Armament: 5 5.5" behind shields; 4 37 mm AA; 4 13 mm AA; 9 21.7" TT in triple mounts; 4 DCT.

Five of these six big *contre-torpilleurs* are in Allied hands. *Le Triomphant* has been a Free French unit from the early days of General de Gaulle's movement. *Le Fantasque* and *La Terrible*, refitted at the Boston Navy Yard in 1943 and perhaps now mounting guns and tubes of American caliber, came over with Dakar. *L'Audacieux*, sunk in action with British forces in September, 1940, when General de Gaulle attempted to swing Dakar into the Allied camp with an insufficient show of force, was refloated and taken to Bizerte for repair, where she was captured by Allied forces occupying that port in 1943, and *Le Malin* was disabled and later taken at Casablanca as a result of action by U. S. forces. Only the fate of *L'Indomptable* is unclear. *La Terrible* in 1935 set what is probably the all-time speed record for ocean-going vessels when her engines turned up 100,000 SHP (instead of their designed 74,000) for a few minutes to spin her through the water at an astounding 45.25 knots. For an hour, *La Terrible* maintained an output of 94,200 SHP and speed of 44.9 knots; for eight hours, about 90,000 SHP and 43 knots. Other ships of this class of destroyers also considerably exceeded their designed performance.

9 Aigle Class

(A) ALBATROS (1930), GERFAUT (1930), VAUTOUR (1930), AIGLE (1931), EPERVIER (1931), CASSARD (1931), KERSAINT (1931), TARTU (1931), VAUQUELIN (1932). Standard Displacement: 2,441 tons. Dimensions: First five, 423' 3" x 40' x 16'; last four, 424' 3" x 39' x 15' 9". Propulsion: Two screws, two sets geared turbines, 68,000 SHP (*Epervier*), 64,000 (others). Speed: 36.5 kts. (*Epervier*), 36 (others). Armament: 5 5.5" behind shields; 4 37 mm AA; 6 21.7" TT in triple mounts (*Aigle*, *Albatros*, *Gerfaut*, *Vautour*), 7 in one triple and two twin mounts (others); 4 DCT.

Milon of the *Aigle* type was sunk at Casablanca in November, 1942, during American landing operations. *Albatros* was also sunk, but can be salvaged. *Le Chevalier Paul*, another *Aigle*, was sunk by British forces in June, 1941, during the Anglo-Free French campaign in Syria. *Moillé Brézé*, still another, caught fire and blew up at a Scottish port in April, 1940. The *Aigles* are improved editions of the *Guépard* class of *contre-torpilleurs*, the earlier *Aigles* and *Guépards* being identical in layout.

5 Guépard Class

Photo Pages 164, 165

GUÉPARD (1928), VERDUN (1928), LION (1929), VALMY (1929), VAUBAN (1929). Standard Displacement: 2,436 tons. Dimensions: 427' x 38' 9" (*Lion*, *Guépard*), 39' (others) x 15' 9" (*Lion*, *Guépard*), 16' 9" (others). Propulsion: Two screws, two sets geared turbines, 64,000 SHP. Speed: 36 kts. Armament: 5 5.5" behind shields; 4 37 mm AA; 6 21.7" TT in triple mounts; 4 DCT.

Bison of *Guépard* *contre-torpilleur* type sunk before collapse of France. Surviving members of class appear to be in hands of Vichy French.

8 or 9 Alcyon Class

(A) L'ALCYON (1926), LA PALME (1926), (A) LE FORTUNE (1926), LE MARS (1926), (A) BRESTOIS (1927), BORDELAIS (1928), (A) FORBIN (1928), (A) FOUGUEUX (1928), (A) BASQUE (1929). Standard Displacement: 1,378 tons. Dimensions: 330' 11" x 32' 3" x 9' 6". Propulsion: Two screws, two sets geared turbines, 32,000-35,000 SHP. Speed: 32-33.5 kts. Armament: 4 5.1"; 2 37 mm AA; 6 21.7" TT in triple mounts; DCTs, 16 depth charges carried.

L'Alcyon was crippled by American gunfire at Casablanca, but can be (and may already have been) salvaged. *Brestois* was sunk at Casablanca; reports as to her salvability differ, hence she is included here. *Fougueux*, also crippled at Casablanca, was taken to the U. S. for repair in 1941. She may have been rearmed with guns and tubes of American caliber. *Le Fortuné*, *Forbin* and *Basque* were last reported demilitarized at Alexandria. Two *Alcyons* were lost in action against the Germans before June, 1940: *L'Adroit* and *Lo Railleuse*. Two others were sent to the bottom by American forces at Casablanca: *Boulonnois* and *Frondeur*. The *Alcyons*, rated by the French as "*torpilleurs*", are among the few types of standard size French destroyers and were the last such to be built until the *Hardis*. They are near-replicas of the *Simoun* type, the main difference being more powerful engines in the last ships of the *Alcyon* group.

4 Tigre Class

(A) LÉOPARD, PANTHÈRE, (A) TIGRE (all 1924); LYNX (1925). Standard Displacement: 2,126 tons. Dimensions: 416' x 37' 6" x 17' 4". Propulsion: Two screws, two sets geared turbines, 55,000 SHP. Speed: 35.5 kts. Armament: 5 5.1", 8 13 mm AA; 6 21.7" TT in triple mounts; 4 DCT.

Léopard is one of the original Fighting French vessels. *Tigre* was taken over by Italy in 1940 after the collapse of France and turned back to the French National Committee in October, 1943 after Italy's surrender. *Panthère* has been reported lost, but there is no confirmation of that fact. *Chocol* and *Jaguar*, lost in 1940 in combat with the Nazis, were of the *Tigre* type. The *Tigres* were France's first oversized destroyers, or *contre-torpilleurs*.

8 Simoun Class

Photo Page 165

(A) OURAGAN, (A) SIMOUN, (A) TRAMONTANE, (A) TYPHON (all 1924); (A) MISTRAL, (A) TEMPÊTE, (A) TORNADE, (A) TROMBE (all 1925). Standard Displacement: 1,319 tons. Dimensions: 347' x 33' x 13' 9". Propulsion: Two screws, two sets geared turbines, 33,000 SHP. Speed: 33 kts. Armament: 4 5.1"; 2 37 mm AA; 6 21.7" TT in triple mounts.

All of the eight surviving *Simoun* class of destroyers (regular-size destroyers, rated "*torpilleurs*" by the French) are under Allied control. *Mistral* and *Ouragan* have been with the Fighting French from the beginning; *Trombe*, taken over by the Italians in 1940, was handed

back to the French, as represented by the French National Committee, in October, 1943; *Simoun* and *Tempête* were last reported at Casablanca, where they lie disabled as a result of a collision in 1942; *Tornado*, *Tramontane* and *Typhon* were damaged and beached at Oran during Allied landing operations, November, 1942. *Bourrosque*, *Cyclone*, *Oroge* and *Sirocco* were lost prior to France's surrender. The *Simouns* are not satisfactory seakeepers, especially in heavy weather.

FRANCE - TORPEDO BOATS

See general note under destroyers.

1 or more Agile Class

In 1938-39, French building yards laid down 14 torpedo boats (which the French rate as "*torpilleurs légers*") of the *Agile* type. Only one, however, which is apparently still in Vichy French hands, *Le Fier*, was launched before the French surrender. Most of the other 11 building in Atlantic coast yards were wrecked by high explosive charges to prevent capture. (Their names were to have been *L'Agile*, *L'Alsacien*, *Le Breton*, *Le Corse*, *Le Farouche*, *Le Normand*, *L'Entrepreneur*, *Le Parisien*, *Le Provençal*, *Le Saintangeois* and *Le Tunisien*.) There has been no report of a resumption of work on two building in Mediterranean slipways, *Le Nicols* and *Le Savoyard*. These vessels were to have had a standard displacement of 994 tons. Other specifications: Dimensions, 295' 3" x 30' 6" x 8' 6"; two screws, two sets geared turbines, 28,000 SHP; speed, 34 kts.; armament, 4 3.9", 4 40 mm AA, 4 21.7" TT in pairs.

11 Pomone Class

Photo Page 164

(A) LA FLORE (1935), (A) LA MELPOMENE (1935), LA POMONE (1935), L'IPHIGÉNIE (1935), BOMBARDE (1936), LA BAYONNAISE (1936), (A) LA CORDELIÈRE (1936), LA POUR-SUIVANTE (1936), BALISTE (1937), (A) BOUCLIER (1937), (A) L'INCOMPRISE (1937). Standard Displacement: 610 tons. Dimensions: 264' 9" x 26' x 9' 3". Propulsion: Geared turbines, 22,000 SHP. Speed: 34.5 kts. Armament: 2 3.9"; 2 37 mm AA; 4 MG; 2 21.7" TT in twin mount.

Five of the *Pomones* are in the service of the Fighting French. A sixth Fighting French vessel of this type was the *Branlebas*, lost in a storm late in 1940.

FRANCE - ANTI-SUBMARINE

U. S.-built Destroyer Escorts

(A) L'ALGERIEN (1943), (A) LE SENEGALAIS (1943), (A) HOVA (1944), (A) LE MAROCAIN (1944), (A) LE TUNISIEN (launch date unreported), possibly to be followed by others. Destroyer escorts of one of the standard U. S. types, transferred to the French National Committee under lend-lease. All built by Dravo, Wilmington.

British-built Hunt Type

(A) L'ASSAILANTE, (A) LA COMBATTANTE (ex-*Holdon*), (A) LA DEFENDANTE and perhaps others of British Hunt type of escort destroyer, particulars to be found under Great Britain. Unlike many vessels of British origin serving in the Free French navy, these appear to have been transferred outright by the British government.

British-built Corvettes

(A) LA DIEPPOISE, (A) LA PAMPOLAISE. Built for France before collapse.

(A) ACONIT (ex-*Aconite*), (A) COMMANDANT D'ESTIENNE D'ORVES (ex-*Lotus*), (A) COMMANDANT DETROYAT (ex-*Coriander*), (A) COMMANDANT DROGU (ex-*Chrysanthemum*), (A) LA MALOUINE, (A) LOBELIA, (A) RENONCULE (ex-*Ronunculus*), (A) ROSELYS. Manned by Fighting French. Title to ships possibly also transferred to French National Committee.

Above corvettes are of standard British Flower class design. *La Bosttoise*, built before the French collapse, mined during trials, June, 1940. Two Free French-manned corvettes have also been lost, *Alysse* (ex-*Alyssum*) and *Mimosa*.

Elan Class Sloops

CHAMOIS, (A) COMMANDANT DUBOC, ELAN (all 1938); ANNAMITE, (A) CHEVREUIL, (A) COMMANDANT BORY, (A) COMMANDANT DELAGE, (A) COMMANDANT DOMINE (ex-*La Rieuse*), COMMANDANT RIVIERE, GAZELLE, LA BATAILLEUSE, (A) LA CAPRICIEUSE, LA CURIEUSE, LA GRACIEUSE, (A) LA SURPRISE (ex-*Bambara*), L'IMPETUEUSE (all 1939); LA BOUDEUSE, (A) LA MOQUEUSE (both 1940); MATELOT LEBLANC, RAGEOT DE LA TOUCHE (both 1942); AMIRAL SENES, ENSEIGNE BALLANDE (launched, but date uncertain); LA FURIEUSE, LA JOYEUSE, LA TROMPEUSE (all building). Standard Displacement: 630 tons (except last seven, 647 tons). 256' x 27' 9" x 7' 9". Two screws, Diesels, 4,000 HP. 20 kts. Armament: 2 3.9" AA, several MG. Also fitted as minesweepers.

The last seven vessels of the Elan class are building or completing on the Mediterranean, in what used to be unoccupied France. *Lo Surprise* was sunk in Oran harbor by the entering Allies in November, 1942, but can be salvaged. *Chamois* was originally used as a navigation school utility craft. Several Elans are doubtless among the vessels scuttled at Toulon in November, 1942.

Charner Class Sloops

Photo Page 166

(A) BOUGAINVILLE (1931), (A) D'ENTRECASTEAUX (1931), DUMONT D'URVILLE (1931), (A) SAVORGNAN DE BRAZZA (1931), AMIRAL CHARNER (1932), D'IBERVILLE (1934), BEAUTEUPS-BEAUPRE (1939), LA GRANDIERE (ex-*Ville d'Ys*, unlaunched as of June, 1940). Standard Displacement: 1,969 tons. 340' x 41' 8" x 14' 9". Diesels, 3,200 HP. 15.5 kts. Armament: 3 5.5", 4 37 mm AA, several MG, 50 mines. 1 seaplane carried.

Bougainville (not to be confused with armed merchant cruiser of same name sunk in 1942) was sunk at Libreville, French Equatorial Africa, in November, 1940, and *D'Entrecasteaux* at Diego Suarez, Madagascar, in May, 1942, but both can be salvaged. *Amiral Charner* and *Dumont d'Urville* are in Indo-China. *Savorgnan de Brazza* is serving with the Free French. *Rigault de Genouilly* of this type has been lost. Neither *Beauteups-Beaupré* nor *La Grandière* had been completed at the time of the French collapse. The former was scuttled in shallow water in the Gironde, but is capable of salvage; the fate of the latter and of *D'Iberville* is uncertain.

Arras Class Sloops

(A) ARRAS, YPRES (ex-*Dunkerque*) (both 1918); (A) AMIENS, (A) BELFORT, CALAIS, COUCY, (A) EPINAL, (A) LASSIGNY, LES EPARGES, TAHURE (all 1919). Standard Displacement: 644 tons. 246' x 31' x 12' 6". Two screws, geared turbines, 5,000 SHP. 20 kts. Armament: 2 5.5", 1 3" AA, 2 MG, depth charges.

Vauquois of this type was lost in 1940. *Ypres* and *Les Eparges* served in recent years as surveying vessels, and *Belfort* as a seaplane tender.

Sloops of Various Types

ANCRE (1918). 604 tons. 262' x 28' 6" x 10' 9". Geared turbines, 5,000 SHP. 20 kts. Armament: 4 3.9", 1 9-pounder AA, 2 MG. Ordinarily a navigation school utility craft. Sister *Suippe* was lost by the Fighting French.

AILETTE (1918). 492 tons. 229' 6" x 27' 3" x 10'. Geared turbines, 5,000 SHP. 20 kts. Armament: 4 3.9", 1 9-pounder AA, 2 MG. Originally a submarine decoy ship, guns being concealed in superstructure. Employed on fishery protection service in peacetime.

DUBOURDIEU (1918). 453 tons. 213' 3" x 27' x 10' max. Two screws, geared turbines, 2,000 SHP. 17 kts. Armament: 1 5.5", 1 3.9". Sister *Enseigne Henry* was scuttled at Lorient to avoid capture.

VILLE D'YS (ex-*Andromède*, 1917). Built in Britain. Begun as *H.M.S. Andromeda*, transferred to France before completion. Generally resembles British *Lupin* type. 1,121 tons. 272' 4" x 39' 4" x 16' 6". Reciprocating engines, 2,500 HP. 17 kts. Armament: 3 3.9", 2 3", 2 47 mm AA. Employed on Newfoundland fishery protection service between wars.

MARNE (1916), SOMME (1917), YSER (1917). 601 tons (*Marne*), 576 (others). 256' x 29' 3" x 11'. Two screws, geared turbines, 5,000 SHP (*Marne*), 4,000 (others). 21 kts. (*Marne*), 20 (others). Armament: 4 3.9", 2 65 mm. Many of same type scrapped during 'thirties. *Somme* possibly mined and lost, 1941.

DILIGENTE (1916), ENGAGEANTE (1917). 315 tons. 217' 9" x 23' x 9' 9". Diesels, 900 HP. 15 kts. Armament: 2 3.9", depth charges.

DEDAIGNEUSE, TAPAGEUSE (both 1916). 265 tons. 197' 6" x 23' 6" x 9' 6". Coal-fired reciprocating engines, 1,200 HP. 15 kts. 2 3.9", 1 3-pounder or 1 MG, depth charges. A sister, *Luranne*, and a somewhat larger, but similar, patrol vessel, *Etourdi*, are war losses.

Submarine Chasers

CH-41-43 (all 1939); 47, 48 (both 1940). Wood. 126 tons. 136' x 17' x 8' 3". Two screws, Diesels, 1,100 HP. 16 kts. Armament: 1 3". Designed for alternative use as seaplane tenders. CH-44-46 scuttled to avoid capture. CH stands for *chasseur*, chaser.

CH-10, (A) 11, 12, (A) 13, 14, (A) 15 (all 1939). 107 tons. No other details available. CH-6, 7, 9, 16 lost or scuttled since war.

CH-1-4 (all 1934). 148 tons. 157' 6" x 17' 9" x 5' 6". Diesels, 2,400 HP. 20 kts. Armament: 1 3", 2 MG, depth charges. Fitted also as minesweepers.

(A) CH 106 (1920), 115, 128 tons. 142' x 17' 2" x 8' 3". Reciprocating engines, 1,300 HP. 16.5 kts. Armament: 1 3", 2 MG. CH-107, lost by Free French, was of this type. CH-111 and 112 are now employed as river gunboats in Indo-China under the names *Commandant Bourdais* and *Avalanche*.

C-25, 51, 56, 74, 95, (A) 9B (1917-18). U.S.-built craft, of a standard U. S. World War I SC 110' type. (Originally bore SC designations). 60 tons. 110' x 15' 6" x 7' 6" max. Gasoline motors, 660 HP. 17 kts. Armament: 1 3" field gun, depth charges.

Armed Merchant Cruisers

Photo Page 164

(A) BARFLEUR, (A) DUC D'AUMALE, ESTEREL, QUERCY and others. Merchant steamers taken over in 1939 and converted for use as merchant cruisers, armed boarding steamers, escorts, etc. Generally are moderately-sized, fairly fast steamers such as were employed on France's pre-war network of Mediterranean mail lines. *Barfleur* and *Duc d'Aumale* are among the vessels immobilized at Martinique until Martinique joined the French National Committee in response to Allied pressure. They may have been re-converted for transport or other duties.

FRANCE - SUBMARINES

About 20 submarines were at Toulon at the time of the French fleet's "suicide," Nov. 27, 1942. About half were scuttled, in shallow water. One is known to have been destroyed by a mine in attempting to escape. Four, *Casablanca*, *Iris*, *Le Glorieux* and *Marsouin*, succeeded in getting away, *Iris* to Barcelona to be interned, and the others to Algiers, where they joined the Allied forces. On Jan. 20, 1944, the French National Committee announced the loss of an unidentified submarine. Early reports stated that a large number of French undersea craft were at Dakar and that Allied occupation of the port would bring them to our side. The report appears to have been exaggerated.

2 British-built

(A) CURIE, (A) JOUR DE GLOIRE. Built by Great Britain for the French National Committee. No particulars, but appear to be of British *Ursula* type.

Aurore Class

AUORE (1939); LA CREOLE (1940); LA BAYADERE, LA FAVORITE, L'AFRICAIN (probably launched before collapse); ANDROMAQUE, ANDROMEDE, ANTIGONE, ARMIDE, ARTEMIS, ASTREE, CLORINDE, CORNELIE, GORGONE, HERMIONE, PHENIX (all building at time of armistice). Displacement: 893 tons, surface; 1,170, submerged. 241' x 21' 4" x 11' 6". Diesels, 3,000 HP, and electric motors, 1,400. 17 kts., surface; 9, submerged. Armament: 9 21.7" TT, 1 3.9", 2 13 mm AA.

Most of these vessels were demolished to prevent capture. However, besides *Aurore*, completed early in 1940, *Phénix*, building at the Toulon yard in southern France, may have been finished.



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Diane Class

Arethuse group: ARETHUSE (1929), ATALANTE (1930). Displacement: 565 tons, surface; 800, submerged. 208' x 21' x 13' 9". 8 21.7" TT.

Dione group: ANTIOPE (1930), DIANE (1930), (A) MEDUSE (1930), AMAZONE (1931), ORPHEE (1931). Displacement: 571 tons, surface; 809, submerged. 211' x 20' x 13' 9". 8 21.7" TT.

Ondine group: ONDINE, ORION (both 1931). Displacement: 558 tons, surface; 787, submerged. 219' x 22' x 15'. 8 21.7" TT.

La Sultane group: LA SULTANE, LA VESTALE (both 1932). Displacement: 565 tons, surface; 800, submerged. 211' x 20' x 13' 9". 7 21.7" TT, 2 15.7" TT.

Iris group: IRIS (1934), (A) MINERVE (1934), (A) JUNON (1935), VENUS (1935). Displacement: 597 tons, surface; 825, submerged. 211' x 20' x 13' 9". 7 21.7" TT, 2 15.7" TT.

Ceres group: CERES, PALLAS (both 1938). Displacement: 662 tons, surface; 858, submerged. 221' x 18' 6" x 15'. 7 21.7" TT, 2 15.7" TT.

Despite the dissimilarity of their measurements, the Dianas are basically of the same type. *Méduse* was disabled at Casablanca in November, 1942, but can be repaired. *Minerve* and *Junon* were among the original Free French fleet. *Iris* escaped from Toulon on Nov. 27, 1942 and proceeded to Barcelona, where she is now interned. War losses among the Dianas include *Argonaute* of the *Arethuse* group and *Amphitrite*, *La Psyché*, *La Sybille* and *Oréode* of the *Diane* group.

Saphire Class

SAPHIR (1928), (A) TURQUOISE (1929), (A) NAUTILUS (1930), (A) RUBIS (1931), DIAMANT (1933), PERLE (1935), EMERAUDE (laid down 1938); AGATE, CORAIL, ESCARBOUCLE (all laid down 1940). Displacement: 669 tons, surface; 925, submerged. 216' 6" x 23' 8" x 16'. Diesels, 1,300 HP, and electric motors, 1,000. 12 kts., surface; 9, submerged. Armament: 5 21.7" TT, 1 3" AA, 32 mines. Mines are stowed in individual chutes in outer ballast tanks, with direct release arrangement.

The Saphir class is entirely the product of the Toulon dockyard. Four of them had not been launched at the time of France's surrender. At least two of these are probably among the four submarines reported building at Toulon, Summer, 1943. *Turquoise*, *Nautilus* and *Rubis* came under Allied control when French West Africa and its main port, Dakar, switched allegiance from Vichy to the French National Committee.

Rédoutable Class

Photo Page 166

PASCAL (1928), REDOUTABLE (1928), VENGEUR (1928), ACHERON (1929), ARGO (1929), FRESNEL (1929), HENRI POINCARÉ (1929), ARCHIMEDE (1930), PEGASE (1930), (A) PROTEE (1930), L'ESPOIR (1931), LE CENTAURE (1932), (A) LE GLORIEUX (1932), LE TONNANT (1934), (A) CASABIANCA (ex-Casablanca, 1935). Displacement: 1,384 tons (*Rédoutable* and *Vengeur*), 1,379 (others), surface; 2,080 (*Rédoutable* and *Vengeur*), 2,060 (others), submerged. 302' 6" x 27' x 16'. Diesels, 8,400 HP (*Casabianco*), 6,000 (others), and electric motors, 2,000. Two screws. 18 kts. (*Casabianco*), 17 (others), surface; 10, submerged. Armament: 11 21.7" TT (four in fixed mounts, three in triple revolving mount and four in quadruple revolving mount at stern); 1 37 mm AA, 1 MG (*Rédoutable* and *Vengeur*); 1 3.9" AA, 2 MG (others).

Persée is among the vessels laid up at Alexandria since the surrender of France. Fourteen *Rédoutables* are war losses, none of them, however, lost in action against the Germans while France was officially at war with the Reich. Nine—*Actéon*, *Ajax*, *Beveziers*, *Le Conquérant*, *Le Héros*, *Monge Persée*, *Poncelet* and *Sidi-Ferruch*—were lost resisting Allied efforts to win control of the French colonial empire; four—*Achille*, *Agosta*, *Ouessant* and *Pasteur*—were scuttled in 1940 to avoid German capture; and one, *Sfax*, was torpedoed by a German or Italian submarine late in 1940 while en route to Dakar. *Le Glorieux* and *Casabianco* are two of the four submarines that escaped from Toulon, Nov. 27, 1940.

Ariane Class

ARIANE (1925), DANAE (1927), EURYDICE (1927). Displacement: 576 tons, surface; 765, submerged. 216' 6" p.p. x 20' 4" x 13' 6". Diesels, 1,200 HP, and electric motors, 1,000. 14 kts., surface; 7.5, submerged. Armament: 7 21.7" TT, 1 3" AA, 2 MG. Generally resemble *Sirène* class.

Circe Class

CIRCE (1925), CALYPSO (1926), THETIS (1927). Displacement: 552 tons, surface; 785, submerged. 204' 6" p.p. x 21' 4" x 12' 9". Diesels, 1,250 HP, and electric motors, 1,000. 14 kts., surface; 7.5, submerged. Armament: 7 21.7" TT, 1 3" AA, 2 MG. Generally similar to *Sirène* class.

Doris, of *Circe* type, is a war loss.

Sirène Class

NAIADE, SIRENE, GALATEE (all 1925). Displacement: 548 tons, surface; 764, submerged. 210' p.p. x 21' x 14' 9". Diesels, 1,300 HP, and electric motors, 1,000. 14 kts., surface; 7.5, submerged. Armament: 7 21.7" TT, 1 3" AA, 2 MG.

Requin Class

(A) MARSOUIN (1924), REQUIN (1924), DAUPHIN (1925), ESPADON (1926), PHOQUE (1926), CAIMAN (1927). Displacement: 974 tons, surface; 1,441, submerged. 257' 6" p.p. x 23' x 17' 9". Diesels, 2,900 HP, and electric motors, 1,800 HP. 16 kts., surface; 10, submerged. Armament: 10 21.7" TT (four bow, two stern, four in twin revolving mounts before and abaft conning tower), 1 3.9", 2 MG AA. *Caiman*, *Espadon*, *Phoque* carry unusually large supply of torpedoes, 32; others carry only 16.

Marsouin is one of vessels that escaped Toulon to join the Allies in 1942. *Morse*, *Norval* and *Souffleur*, the second a Free French vessel, are war losses.

FRANCE - AUXILIARIES AND SPECIAL TYPES

OBSOLETE BATTLESHIPS

L'OCEAN (ex-Jeon Bort, 1911). Sister of *Courbet* and *Paris*, partly demilitarized under Washington treaty and used for training purposes. Standard Displacement: 22,189 tons. 541' x 92' x 32' 6". 28,000 HP. 20 kts. Armament: 12 12", 22 5.5", 7 3" AA, 2 47 mm AA. *L'Océan* was at Toulon on Nov. 27, 1942, but escaped damage.

CONDORCET (1909). Partly demilitarized under Washington treaty and used for training purposes. Standard Displacement: 17,600 tons. 475' 9" x 84' 6" x 30'. 22,500 HP. 16 kts. Armament: 4 12", 12 9.4", 2 3" AA.

MOTOR TORPEDO BOATS

VTB-15-40. Begun just before the war. Status at time of French armistice unknown; some may have been destroyed; others, building in southern France, may have been completed since. May vary as to type, but doubtless bear a general resemblance to earlier French MTBs.

VTB-11-14 (1937-38). 28 tons. 2,000 HP. 45 kts. 2 18" TT. No other particulars announced; are generally enlarged editions of *VTB-8*.

VTB-8. 19 tons. 62' 4" x 13' x 9' 3" max. Gasoline motors, 2,200 HP. 46 kts. (50 kts. exceeded on trials). Armament: 2 18" TT (fired stern first from twin closed tubes or dropped from external side gears), 2 MG.

MINELAYERS

CASTOR (ex-Kozmo *Minin*, 1916). Former Russian ice-breaker, built in England. Standard Displacement: 3,150 tons. 248' x 57' x 19'. Coal-fired reciprocating engines, 6,400 HP. 14.5 kts. Armament: 4 3.9", 2 37 mm AA, 368 mines.

(A) POLLUX (ex-Ilyo *Murometz*, 1915). Former Russian icebreaker, built in England. Standard Displacement: 2,460 tons. 211' x 50' 6" x 20' max. Two screws, coal-fired reciprocating engines, 4,000 HP. 14 kts. Armament: 4 3.9", 2 37 mm AA, 236 mines.

MINESWEEPERS

GRANIT, MEULIERE (both 1918). 354 tons. 189' x 26' x 7' 6". Coal-fired reciprocating engines, 550 HP. 12 kts. Armament: 1 65 mm.

NETLAYERS

LE GLADIATEUR (1933). Ocean-going type. Displacement: 2,293 tons. 370' 9" x 41' 6" x 11' 6". Geared turbines, 6,000 SHP. 18 kts. Armament: 4 3.5" AA, 6 MG.

TARGET SHIP

(A) IMPASSIBLE (1939). Wireless-controlled vessel, one of first ships built for purpose. Displacement: 2,450 tons. 328' x 39' 4" x 13'. Geared turbines, 10,000 SHP. 20 kts. Originally was to be without armament, but has probably been armed and altered to fit her for other duties.

RIVER GUNBOATS

MYTHO, TOURANE (both 1933). 95 tons. 114' 9" x 17' 6" x 3'. Diesels, 250 HP. 10 kts. 1 3" howitzer, 1 37 mm, 2 MG. Last reported in Indo-China.

FRANCIS-GARNIER (1927). 639 tons. 196' 9" x 33' 9" x 7' 3". Reciprocating engines, 3,200 HP. 15 kts. Armament: 2 4", 1 3" AA, 2 1-pounder, 4 MG. Built for Lower Yangtze patrol; probably in hands of Japanese or Nanking Chinese.

VIGILANTE (1922). 218 tons. 170' x 25' 3" x 4' max. Two screws, 550 HP. 12 kts. 2 3", 2 37 mm, 4 MG. A sister, *Argus*, was dropped from the active list early in the war.

AVALANCHE (ex-CH-112), COMMANDANT BOURDAIS (ex-CH-111) (both 1921). Ex-submarine chasers adapted for service as Indo-China gunboats. Specifications as CH-106.

BALNY (1920). 201 tons. 167' 3" x 23' x 4' 6". Coal-fired reciprocating engines, 920 HP. 14 kts. 1 3", 2 1-pounder, 4 MG.

DOUDART DE LAGREE (1909). 183 tons. 167' 3" x 22' 6" x 4' 6". Coal-fired reciprocating engine, 900 HP. 14 kts. 1 3" field gun, 2 37 mm, 4 MG.

TRAWLERS AND DRIFTERS

In 1939 and 1940, the French navy took over a considerable number of trawlers and drifters, chiefly for service as auxiliary minesweepers. Many were also purchased abroad, chiefly in the United States and Great Britain. Names given for some of the vessels were:

Trawlers, ex-British: LA BENOISE (1937), LA HAVRAISE (1934), L'AJACCIEUNE (1935), LA NANTAISE (1933), LA SETOISE (1934), LA TOULONNAISE (1934).

Trawlers, ex-American: L'ALGEROISE, LA SABLaise, LA SERVANAISE, L'ORANAISE.

Drifters, ex-American: COLONEL CASSE, JEAN ARGAUD.

Drifters, origin (foreign) unreported: CAP COURONNE.

Type and origin (foreign) unreported: CAP BEAR, CAP CARTERET, (A) CAP D'ANTIFER, CAP FERRAT, CAP FREHEL, CAP NEGRE.

SURVEYING VESSELS

BENGALI, CORMORAN, GOELAND, IBIS, MOUETTE, PELICAN. Authorized in 1938. Some may never have been begun. Designed to replace six oldest survey vessels. Are reported planned to resemble *Elan* class sloops.

AMIRAL MOUCHEZ (1936). 719 tons. 203' 6" x 33' 9" x 11'. Diesel, 800 HP. 12 kts. Armament: 1 3" (peacetime), 2 3.9" (wartime).

(A) PRESIDENT THEODORE TISSIER (1933). Commercial vessel, taken over by French navy in 1938 for use as both surveying and training craft. 965 tons. 166' x 29' x 16'. Diesel, 800 HP. 11 kts. Armament unreported. Now doubtless employed as an escort. Has extraordinary cruising radius, 24,000 sea miles (more than circumference of globe).

LAPEROUSE (1919). 781 tons. 196' 8" x 27' 9" x 17' 9". Reciprocating engines, 1,100 HP. 11 kts. 1 3" AA. Former Navy transport lengthened when transferred to survey service.

ASTROLABE (ex-Mouvielle), ESTAFETTE, (A) GASTON RIVIER (ex-Ortolan), OCTANT (ex-Piverd) (all 1918); SENTINELLE (1920). 315 tons. 142' 9" x 24' x 13'. Coal-fired, 450 HP. 10 kts. Armament: 1 47 mm.

CHIMERE (ex-Zelée, ex-Huron, 1901). Former tug. 613 tons. 880 HP. 14 kts. Armament: 1 3.9".

OILERS

ADOUR (1938); LOT, TARN (both 1939). 4,220 tons. 433' x 52' 6" x 20' 9". Geared turbines, 5,200 SHP. 15 kts. Armament: 2 3.9". Last two were apparently uncompleted at time of French collapse. Present status unknown for all three. Three more were ordered, *Charente*, *Mayenne*, *Baise*, but had not been begun by June, 1940, and will probably never be built. (Rated as fleet supply vessels).

ETHYLENE (1937). 1,950 tons. 202' x 40' (draft unreported). 900 HP. 10.5 kts. (Rated as service boat).

(A) NIVOISE (Hamburg, 1931). Purchased, 1934. Standard Displacement: 8,500 tons. 467' x 62' x 28' 9". Single screw, reciprocating engine, 3,400 HP. 11 kts. 2 3.9", 2 37 mm AA.

ELORN (1930), VAR (1931). Built in Hamburg as part of German war reparations. Details unreported.

LE MEKONG (1928). Standard Displacement: 5,482 tons. 456' x 61' 9" x 26'. Diesels, 4,850 HP. 13.5 kts. 2 3.9", 2 1-pounder. Equipped to carry distilled water as well as fuel oil.

LE LOING (1927). Standard Displacement: 3,481 tons. 503' 6" x 50' 6" x 25'. Diesels, 4,100 HP. 13.5 kts. 2 3.9", 2 3" AA.

DROME (ex-Aube, 1920), DURANCE (1920), RANCE (1921). 1,055 tons. 242' 9" x 38' x 15' 9". Turbines, 1,000 SHP. 10 kts. 2 3" AA.

DORDOGNE (ex-San Isidoro, Britain, 1914). 7,333 tons. 530' x 66' 6" x 29'. 4,150 HP. 11.7 kts. Armament: 2 6.1".

GARONNE (1911). 3,533 tons. 394' x 50' 9" x 27' 3". 2,600 HP. 11 kts. Armament: 2 3.9".

RHONE (1910). 2,785 tons. 369' x 45' x 25'. 2,100 HP. 11 kts. Armament unreported.

FLEET TUGS

(All French fleet tugs are driven by reciprocating engines).

BUFFLE (1939). 1,115 tons. 167' 4" x 33' (draft unreported). 2,000 HP. 12 kts.

(A) ACTIF, APPLIQUE, ATTENTIF, CEPET, CHAMPION, COTENTIN, TEDESSA (all laid down 1937-38). 672 tons. 114' 9" x 27' 9". 1,000 HP. 11 kts.

FORT, TENACE (both 1933). 600 tons. 1,000 HP. 13 kts.

LABORIEUX (1930). 876 tons. 2,000 HP. 11 kts.

VALEUREUX (1930). Similar to *Actif* class.

SIX-FOURS (1920). 590 tons. 1,500 HP. 10 kts.

HIPPOPOTAME (1918), (A) MAMMOUTH (1918), RHINOCEROS (1918), MASTODONTE (1919). 954 tons. 1,800 HP. 12 kts.

CANARD (1918), PAON (1918), PIGEON (1918), FAISAN (1919). 767 tons. 800 HP. 11 kts.

ATHLETE (1918), LUTTEUR (1919). 590 tons. 750 HP. 9 kts.

HERON II (1918). 667 tons. 850 HP. 10.5 kts.

PINGOUIN, PINTADE (both 1917). 700 tons. 700 HP. 10 kts.

RAMIER (1917). 685 tons. 750 HP. 10 kts.

NESSUS (1913). 590 tons. 1,500 HP. 12 kts.

SAMSON (1906). 650 tons. 1,000 HP. 11 kts.

GOLIATH (1903). 1,127 tons. 1,450 HP. 11 kts.

CYCLOPE (1901). 650 tons. 1,000 HP. 13 kts.

SAIL TRAINING VESSELS

Photo Page 166

(A) LA BELLE POULE, (A) L'ETOILE (both 1932). 227 tons. 128' x 28' 8" x 11' 9". Auxiliary Diesel, 120 HP. 6 kts.

ZELEE (acquired 1931). 197 tons. 151' x 29' 6" x 10'. Auxiliary Diesel, 90 HP. 7 kts. In French Oceania.

ALOUETTE (1929). 44 tons. 60' x 20' 4" x 10'.

MUTIN (1927). 54 tons. 66' 3" x 20' x 10' 9".

MESANGE (1921). 60 tons. 56' 9" x 21' 6" x 10'.

OTHER VESSELS

AUDE (ex-*Chateau Lalite*, 1924). Supply ship. 1,820 tons. 279' 9" x 39' 6" x 20' 6". Reciprocating engine, 1,700 HP. 10 kts.

CHAMPLAIN (1919). Refrigerated cargo ship. 521 tons. 167' 4" x 26' 3" x 13' 9". Coal-fired, 1,100 HP. 10 kts. 1 3".

FAUVETTE II (1916). Fishery protection vessel. 315 tons. 142' 9" x 24' x 12'. Coal-fired, 500 HP. 10 kts. No armament. Sister, *Passereau II*.

GOLO (1933). Supply ship. Standard Displacement: 2,118 tons. 294' 6" x 44' 4" x 15' 9". Diesels, 1,850 HP. 12.5 kts. 2 3", 2 37 mm AA. One of early vessels to employ Yourkevitch-type hull.

JEANNE ET GENEVIEVE (1917). Supply ship. 620 tons. 147' x 24' x 12' 6". 600 HP. 11 kts. Armament: 1 3".

JULES VERNE (1931). Submarine tender. 5,747 tons. 400' 3" x 56' 6" x 19'. Two screws, Diesels, 7,000 HP. 16 kts. 4 3.5" AA, 4 37 mm AA, 9 MG. Equipped to supply and maintain a squadron of six submarines, with rest facilities for their crews.

LANVEOC (1937). Transport. 350 tons. 121' 4" x 26' 6" x 10'. Diesel, 540 HP. 12 kts.

PASSEREAU II (1916). Fishery protection vessel. Sister of *Fauvette II*.

PRIMEVERE (1912). Fishery protection vessel. 490 tons. 116' x 22' x 14'. Coal-fired, 450 HP. 8.5 kts. No armament.

(A) QUENTIN ROOSEVELT (ex-*Flamant*, 1916). Fishery protection vessel. 585 tons. 154' x 27' 6" x 14' 6". Coal-fired, 1,100 HP. 13 kts. 1 3", 1 3-pounder.

FRANCE - AIRCRAFT CARRIERS

2 Joffre Class

In 1938 and 1939 respectively, the Penhoet yard laid down two 18,000-ton aircraft carriers, *Joffre* and *Poinlevé*. Neither of these, however, had been launched at the time of France's collapse. Both are understood to have been wrecked by high explosives to prevent German capture. Even if not thoroughly wrecked, there is a strong likelihood that the hulls were broken up by the Nazis for scrap. They were to have been 774' 4" in length and 111' 6" in beam (draft unreported), to have accommodated 40 planes and to have been armed with 8 5.1" AA. Intended speed was 32 kts.

1 Béarn Class

Photo Page 162

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------|----------|-----------|----------|-------|
| (A) BÉARN | La Seyne | 1/14 | 4/20 | 5/27 |

Standard Displacement: 22,146 tons.

Dimensions: 599' x 89' x 30' 6".

Propulsion: Four screws, two outer driven by geared turbines, 22,200 SHP, two inner driven by reciprocating engines (used also for cruising and maneuvering), 15,000 HP. Total HP: 37,200. Speed: 21.5 kts.

Planes: Over 40 (36 normally carried). Armament: 8 6.1"; 6 3.9" AA; 8 37 mm AA; 15 MG. 4 21.7" TT. Armor: 3.25" belt; decks totaling 3" (including 1" flight deck).

The *Béarn*, which was one of the vessels immobilized for years at Admiral Robert's Martinique Vichy hangout but which may have been pressed into Allied service since the stubbornly pro-fascist admiral finally capitulated to American pressure, was originally begun as a battleship of the now-defunct Normandie class. She was launched as a battleship, in fact, the conversion to aircraft carrier being begun only in August, 1923. The *Béarn* is an unusual ship in a number of ways. Her flight deck is curved in plan instead of more or less rectangular as is usual. She has a special hot water feed system for filling the radiators of French seaplanes, many of which use liquid-cooled engines, unlike the seaplanes in general use in most countries. And there is a system of ducts for mixing cold air into her smoke so as to eliminate plane-snarling eddies in the surrounding air. The *Béarn* got to Martinique in 1940 by way of seeking non-German refuge. She had aboard a cargo of American P-36s and other craft hastily given to France by the U. S. in the desperate days of May, 1940. The planes are probably beyond repair at this date.

FRANCE - AIRCRAFT AUXILIARIES

SEAPLANE CARRIERS

COMMANDANT TESTE (4/12/29). Standard Displacement: 10,000 tons. 558' x 71' 6" (hull), 88' 6" (including deck overhang) x 22' 9". Two screws, geared turbines, 21,000 SHP. Mixed firing. 20.5 kts. Armament: 12 3.9" AA, 8 1-pounder AA, 12 MG. Armor: 2" side at waterline, 1.5" deck over engine and boiler spaces. Planes: 26. Catapults: 4.

The *Commandant Teste*, built as a tender and supplier of reserve aircraft to the *Béarn* and to men-of-war that carry scouting planes, was badly damaged by British gunfire at Mers-el-Kébir, July 5, 1940. She was able to make her way back to Toulon, however, where she may have been among the vessels scuttled in the suicide of the French fleet.

AIRCRAFT TENDERS

SANS PAREIL, SANS PEUR, SANS REPROCHE (ex-*Sans Crainte*), SAN SOUCI. All laid down in 1938. 1,172 tons. Diesels. 15 kts. Armament: 1 3". Launching and present status unreported.

PETREL 1-8 (1932-33). 80 tons. 87' x 14' 8" x 3'. Diesel, 270 HP. 11.5 kts. Normally stationed at various points along French coast.

HAMELIN (1920). Ex-transport. 622 tons. 168' x 26' x 17'. Coal-fired reciprocating engine, 1,200 HP. 12 kts. 2 3.9", 1 MG.

Italy took over fifteen French ships in 1940. Destroyers *Tigre* and *Trombe* returned to French National Committee in October, 1943. Other appropriated vessels unnamed.

ITALY - BATTLESHIPS

3 Italia Class

Photo Page 169

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------------------------|---------|-----------|----------|---------|
| ITALIA (ex- <i>Littorio</i>) | Ansaldo | 10/28/34 | 8/27/37 | 5/1/40 |
| VITTORIO VENETO | Trieste | 10/28/34 | 6/25/37 | 4/39/40 |
| IMPERO | Ansaldo | 5/14/38 | 11/15/39 | |

Standard Displacement: 35,000 tons.

Dimensions: 775' x 106' 4" x 28'.

Propulsion: Four screws, four sets high temperature, high pressure geared turbines, 130,000 SHP. Speed: 30 kts.

Armament: 9 15"/50 in triple turrets; 12 6"/55 in triple turrets; 12 3.5" AA; additional smaller AA. Armor: 9"-12" belt; balance unreported. Planes: 3. Catapults: 2.



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The *Italia* and *Vittorio Veneto* are among the Italian vessels which proceeded to Malta after the Italian surrender. The *Impero* was captured by the Nazis in an incomplete state at Leghorn. En route to Malta, the *Roma*, a sister ship, was sunk by a fluke bomb hit. The *Itolio* was damaged at Taranto and the *Vittorio Veneto* in the Battle of Cape Matapan.

4 Cavour Class

Photo Page 169

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------------|--------------|-----------|----------|----------|
| CONTE DI CAVOUR | Spezia | 8/10/10 | 8/10/11 | 1/15 |
| GIULIO CESARE | Ansaldo | 6/23/10 | 10/15/11 | 11/29/13 |
| GAIO DUILIO | Castellamare | 4/25/12 | 4/24/13 | 5/15 |
| ANDREA DOREA | Spezia | 3/24/12 | 3/30/13 | 3/16 |

Standard Displacement: 23,600 tons. Dimensions: 611' 6" x 92' x 30'.

Propulsion: Two screws, two sets geared turbines, 75,000 SHP. Speed: 27 kts.

Armament: 10 12.6"/43.8 in two triple and two twin turrets; 12 4.7" in twin turrets (*Cavour*, *Cesare*); 12 5.3"/45 in triple turrets (*Duilio*, *Dareo*); 8 3.9" AA in twin turrets (*Cavour*, *Cesare*); 10 3.5"/48 AA in single gunhouses (*Duilio*, *Doreo*); numerous smaller AA. Armor: 8"-9.5" belt; 11" main turret faces. Planes: 4. Catapults: 2.

All four of these vessels are now in Allied hands, the last three among the ships which steamed to Malta following Italy's surrender, and the first, a partly salvaged hulk at Taranto. The *Cavour* was crippled, later foundering, in the celebrated RAF raid on Taranto in 1940, but was subsequently raised and was undergoing salvage at the time Italy quit the Axis. The *Cesare* was also damaged in that raid. All four *Cavours* were completely rebuilt and rearmed in 1933-39.

ITALY - CRUISERS

1 Bolzano Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|---------|-----------|----------|-------|
| BOLZANO | Ansaldo | 6/30 | 8/31/32 | 8/33 |

Standard Displacement: 10,000 tons. Dimensions: 646' 3" x 68' x 18' 9".

Propulsion: Four screws, four sets geared turbines, 150,000 SHP. Speed: 36 kts.

Armament: 8 8"/54 in twin turrets; 12 3.9"/47 AA in twin turrets; numerous smaller AA. 8 21" TT in quadruple mounts. Armor: 2.75" belt; 3" turret faces; 2" deck. Planes: 2. Catapults: 1.

The *Bolzano* is one of the Italian cruisers which notoriously sacrifice armor protection to speed (compare with U. S. San Franciscos or *Wichita*)—a bad bargain when the enemy is a well-handled fleet like the British, for the speed proved to be no protection at all against torpedo and other planes and, when slowed down by damage, these craft proved easy prey for surface ship attack. The *Bolzano* is the sole Italian heavy cruiser still intact. Her present whereabouts and ownership are unknown.

1 Gorizia Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|---------|-----------|----------|-------|
| GORIZIA | Orlando | 1929 | 12/28/30 | 1931 |

Standard Displacement: 10,000 tons. Dimensions: 599' 6" p.p. x 67' 8" x 19' 6".

Propulsion: Two screws, two sets geared turbines, 95,000 SHP. Speed: 32 kts.

Armament: 8 8"/53 in twin turrets; 16 3.9"/47 AA; numerous smaller AA, including 8 37 mm. Armor: 5.5" belt; 5" turret faces; 2" deck. Planes: 2. Catapults: 1.

The *Gorizia* is the sole survivor of the *Fiume* class. The others, the *Fiume*, *Zara* and *Pola*, were sunk by British cruisers and battleships in the point-blank night action of Cape Matapan. The *Gorizia* was torpedoed by a British submarine and reported lost. She was beached and has been salvaged, however. Her present whereabouts are unknown.

2 Ciano Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------------------|---------|-----------|----------|-------|
| AMMIRAGLIO COSTANZO CIANO | | 1940 | | |
| VENEZIA | | 1940 | | |

Standard Displacement: 8,000 tons.

Dimensions unreported.

Propulsion: Geared turbines.

Speed: 35 kts.

Armament: 10 6"/53 in two twin and two triple turrets; additional smaller guns. 8 21" TT in quadruple mounts. Armor unreported. Planes: 4. Catapults: 2.

These vessels were begun just before Italy stabbed France in the back. Little progress has been made with them since.

12 Regolo Class

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------------|--------------|-----------|----------|---------|
| ATTILIO REGOLO | Leghorn | 9/39 | | 1942(?) |
| SCIPIO AFRICANO | Leghorn | 9/39 | | 1942(?) |
| CAIO MARIO | Leghorn | 9/39 | | |
| CLAUDIO TIBERIO | Spezia | 1939 | | |
| PAOLO EMILIO | Ansaldo | 10/39 | | |
| CORNELIO SILLA | Ansaldo | 10/39 | | |
| OTTAVIANO AUGUSTO | Riuniti | 9/23/39 | 1940-41 | 1942 |
| POMPEIO MAGNO | Riuniti | 9/23/39 | 1940-41 | 1942 |
| ULPIO TRAIANO | Riuniti | 9/39 | | |
| VIPSANIO AGRIPPA | Tirreno | 10/39 | | |
| CLAUDIO DRUSO | Tirreno | 9/39 | | |
| GIULIO GERMANICO | Castellamare | 4/39 | | |

Standard Displacement: 3,300 tons.

Dimensions: 444' 3" x 44' 9" x 13'.

Propulsion: Two screws, two sets geared turbines, 120,000 SHP. Speed: 41 kts.

Armament: 8 5.3"/45 in twin turrets; 6 65 mm AA; numerous smaller AA. 8 21" TT in quadruple mounts. Fitted for minelaying. Armor: very light. Planes: 0. Catapults: 0.

Although all of these vessels were to have been delivered in 1941, it appears that few have actually been completed and it is possible that one, the *Pompeio Magno*, among the units which joined the Allies at Malta, is not actually the *Pompeio Magno* of this class, but a renamed Thai cruiser under construction in Italy at the outbreak of the war believed to have been taken over by the Italian Navy. The *Attilio Regolos* are oversized destroyer leaders built as a reply to the French *Mogadors*. *Ottaviano Augusto* was damaged by American bombers in a raid on Ancona in October, 1943.

2 Quarto Class (?)

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|------------------|-----------|----------|-------|
| QUARTO | Riuniti, Trieste | 8/26/39 | 10/40 | |
| BRINDISI | Riuniti, Trieste | 9/25/39 | | |

Standard Displacement: 4,200 tons.

Dimensions: 482' 3" x 47' x 13' 9".

Propulsion: Two screws, two sets geared turbines, 45,000 SHP. Speed: 30 kts.

Armament: 6 6" in twin turrets; 6 3" AA, numerous smaller AA. 6 18" TT in triple mounts. Armor unreported.

The *Quarto* and *Brindisi* (original names unreported) were laid down to order of the Thailand navy, but were reported taken over by Italy early in 1941. It is not certain that either was finished, or that these are their Italian names.

2 Garibaldi Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------------------------------|------------------|-----------|----------|-------|
| GIUSEPPE GARIBALDI | Riuniti, Trieste | 12/33 | 4/21/36 | 1937 |
| LUIGI DI SAVOIA DUCA DEGLI ABRUZZI | Orlando, Leghorn | 12/33 | 4/21/36 | 1937 |

Standard Displacement: 7,900 tons.

Dimensions: 613' 9" x 61' x 17'.

Propulsion: Two screws, two sets geared turbines, 100,000 SHP. Speed: 35 kts.

Armament: 10 6"/53 in two twin and two triple turrets; 8 3.9"/47 AA in twin turrets; numerous smaller AA. 6 21" TT in triple mounts. 2 DCT. Fitted for minelaying. Armor: 1.5"-3" belt; 1.5" deck; 1" gunhouses. Planes: 4. Catapults: 2.

Both of these ships are in Allied hands. Reports that one was sunk early in the war are untrue.

2 Emanuele Filiberto Class

Photo Page 170

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------------------------|---------|-----------|----------|-------|
| EUGENIO DI SAVOIA | Ansaldo | 1/32 | 3/16/35 | 1/36 |
| EMANUELE FILIBERTO DUCA D'AOSTA | Orlando | 1/32 | 4/22/34 | 7/35 |

Standard Displacement: 7,300 tons.

Dimensions: 610' 3" x 57' 4" x 16' 4".

Propulsion: Two screws, two sets geared turbines, 110,000 SHP. Speed: 36.5 kts.

Armament: 8 6"/53 in twin turrets; 6 3.9"/47 AA in twin gunhouses; numerous smaller AA, including 8 37 mm. 6 21" TT in triple mounts. 2 DCT. Armor: 1.5"-3" sides; 1" turrets; 1.5" deck. Planes: 3. Catapults: 1.

Both of these vessels, which resemble the *Raimondo Montecuccoli* and *Muzio Attendolo*, are in Allied hands.

2 Raimondo Montecuccoli Class

Photo Page 171

| Name | Builder | Keel Laid | Launched | Comp. |
|-----------------------|---------|-----------|----------|-------|
| RAIMONDO MONTECUCCOLI | Ansaldo | 10/31 | 8/2/34 | 7/35 |
| MUZIO ATTENDOLO | Trieste | 9/31 | 9/9/34 | 8/35 |

Standard Displacement: 6,950 tons.

Dimensions: 597' 9" x 54' 6" x 14' 9".

Propulsion: Two screws, two sets geared turbines, 106,000 SHP. Speed: 37 kts.

Armament: 8 6"/53 in twin turrets; 6 3.9"/47 AA in twin gunhouses; numerous smaller AA, including 8 37 mm. 4 21" TT in twin mounts. 2 DCT. Armor: 1.5" sides; 1" gunhouses and turrets. Planes: 3. Catapults: 1.

The *Raimondo Montecuccoli* is in Allied hands; the fate of her sister is unknown.

1 Luigi Cadorna Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------|---------|-----------|----------|-------|
| LUIGI CADORNA | Trieste | 9/30 | 9/30/31 | 8/33 |

Standard Displacement: 5,000 tons.

Dimensions: 554' 6" x 50' 9" x 14'.

Propulsion: Two screws, two sets geared turbines, 95,000 SHP. Speed: 37 kts.

Armament: 8 6"/53 in twin turrets; 6 3.9"/47 AA in twin shielded mounts; numerous smaller AA, including 8 37 mm AA. 4 21" TT in twin mounts. 2 DCT. Armor: practically none. Planes: 2. Catapult: 1.

Unlike later Italian ships, the *Luigi Cadorna* has the now somewhat unusual feature of a fixed catapult. She is among the Italian vessels that went to Malta.

1 Giovanni Delle Bande Nere Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------------------------|--------------|-----------|----------|-------|
| GIOVANNI DELLE BANDE NERE | Castellamare | 10/28 | 4/27/30 | 4/31 |

Standard Displacement: 5,050 tons.

Dimensions: 555' 6" x 50' 9" x 14' 3".

Propulsion: Two screws, two sets geared turbines, 95,000 SHP. Speed: 37 kts.

Armament: 8 6"/53 in twin turrets; 6 3.9"/47 AA in twin shielded mounts; numerous smaller AA, including 8 37 mm. 4 21" TT in twin mounts. 2 DCT. Armor: practically none. Planes: 2. Catapults: 1 (fixed).

The *Giovanni Delle Bande Nere* (like most Italian cruisers, named after a Condottieri leader, Condottieri being notorious free-booting soldiers of fortune celebrated in mediaeval Italian history) is the sole survivor of a group of ships which originally numbered 3. The class was designed as a reply to Franco's super-destroyers, to which they were superior. Their opponents, however, turned out to be better protected British cruisers and other heavy vessels which have made the Italian emphasis on speed and sacrifice of protection seem extremely ill-advised. The *Giovanni Delle Bande Nere*'s present whereabouts are unknown.

1 Bari Class

Photo Page 171

| Name | Builder | Keel Laid | Launched | Comp. |
|------------------|----------|-----------|----------|-------|
| BARI (ex-Pillau) | Schichau | 4/13 | 4/14 | 12/15 |

Standard Displacement: 3,250 tons.

Dimensions: 444' x 44' 6" x 13' 6".

Propulsion: Two screws, two sets geared turbines, 21,000 SHP. Speed: 27 kts.

Armament: 8 5.9"/42 in single mounts; 3 3" AA; smaller AA. Fitted as minelayer, capacity 120 mines. Armor: 3.25" side; 1.5"-3" decks.

The *Bari* is an obsolete ex-German cruiser taken over by Italy in 1920. She had originally been begun to Russian order but was requisitioned by the Kaiser's Navy in 1914. Present whereabouts unknown. Prior to the war, she was used mainly in colonial waters.

1 Taranto Class

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------------------|---------------|-----------|----------|-------|
| TARANTO (ex-Strassburg) | Wilhelmshaven | 4/10 | 8/24/11 | 12/12 |

Standard Displacement: 3,200 tons.

Dimensions: 455' x 44' x 12' 4".

Propulsion: Two screws, two sets geared turbines, 13,000 SHP. Speed: 21 kts.

Armament: 7 5.9"/43 in single mounts; 2 3" AA; smaller AA. Fitted as mine layer, capacity 120 mines. Armor: 2.5" belt; 2" deck.

Like the *Bari*, the *Taranto* was taken over from Germany in 1920. In recent years the *Taranto*, which burns both coal and oil, has been used in colonial waters. Present situation unknown.

ITALY - DESTROYERS

Eleven Italian destroyers are in Allied hands; identities are not yet available.

1 ex-Yugoslav Vessel

PREMUDA (ex-Dubrovnik, 1931). Built by Yarrow in England. Standard Displacement: 1,850 tons. Dimensions: 371' 6" x 35' x 11' 9". Propulsion: Two screws, two sets geared turbines, 42,000 SHP. Speed: 37 kts. Armament: 4 5.5" in single gunhouses; 2 3.4" AA; 6 Bofors 40 mm AC AA (two twin and two single mounts) (possibly rearmed with guns of Italian caliber); 6 21" TT in triple mounts. Fitted as minelayer.

The *Premuda*, mentioned in Italian communiqués as having been in action in 1942, is almost certainly the Yugoslav destroyer *Dubrovnik*, taken over by Italy in 1941.

8 1939 Class

Eight destroyers were to have been built under the Italians' 1939 naval program. How many were actually built is not known. No particulars available other than that they were to be equipped with 4.7" guns.

10 Aviere Class

AVIERE (1937), ARTIGLIERE (ex-*Comicia Nera*, 1937), ASCARI (1938), CARRAZIERE (1938), GENIERE (ex-*Pontiere*, 1938), ALPINO (1938), FUCILIERE (1938), BERSAGLIERE (1938), GRANATIERE (1938), CARABINIERE (1938), LANCIERE (1938). (Eleven names listed; one unidentified sunk by British surface forces in April, 1942.) Standard Displacement: 1,620 tons. Dimensions: 350' x 38' 6" x 10' 9". Propulsion: Two screws, two sets geared turbines, 48,000 SHP. Speed: 39 kts. Armament: 4 4.7"/50 in twin gunhouses; 6 37 mm AA; some smaller AA; 6 21" TT in triple mounts; 2 DCT; fitted as minelayers.

After Mussolini's fall, the *Comicia Nera* was renamed *Artigliere*. *Nera* was a minor, but unpopular, Blackshirt.

Besides the unidentified vessel mentioned above, the original *Artigliere* of this class has been lost.

1 or 2 Oriani Class

ALFREDO ORIANI (1936), VITTORIO ALFIERI (1936). Standard Displacement: 1,730 tons. Dimensions: 350' 6" x 33' 6" x 11' 3". Propulsion: Two screws, two sets geared turbines, 48,000 SHP. Speed: 39 kts. Armament: 4 4.7"/50 in twin gunhouses; 8 37 mm AA; 4 13 mm AA; 6 21" TT in triple mounts; 2 DCT; fitted as minelayers.

The *Vittorio Alfieri* may have been sunk in the Battle of Cape Matapan. If so, the *Oriani* is sole survivor of a class of four (*Giosue Carducci*, *Vincenzo Gioberti* lost).

2 Grecale Class

GRECALE (1934), SCIROCCO (1934). Standard Displacement: 1,449 tons. Dimensions: 350' x 33' 6" x 10'. Propulsion: Two screws, two sets geared turbines, 44,000 SHP. Speed: 38 kts. Armament: 4 4.7"/50 in twin gunhouses; 8 37 mm AA; 4 13 mm AA; 6 21" TT in triple mounts; 2 DCT; fitted as minelayers.

The Grecales are enlarged editions of the Dardo class listed below. Two, *Maestrale* and *Libeccio*, have been sunk.

2 Folgore Class

FOLGORE (1931), LAMPO (1931). Standard Displacement: 1,220 tons. Dimensions: 315' 3" x 30' 6" x 10' 3". Propulsion: Two screws, two sets geared turbines, 44,000 SHP. Speed: 38 kts. Armament: 4 4.7"/50 in twin mounts behind large shields; 4 37 mm AA; 4 13 mm AA; 6 21" TT in triple mounts; fitted as minelayer.

The *Lampo* was damaged and beached following the Battle of Cape Matapan in 1941, but has been restored to service. *Baleno* and *Fulmine* of this class have been lost.

4 Dardo Class

Photo Page 172

DARDO (1930), FRECCIA (1930), STRALE (1931), SAETTA (1932). Standard Displacement: 1,206 tons. Dimensions: 315' x 32' x 9' 6". Propulsion: Two screws, two sets geared turbines, 44,000 SHP. Speed: 38 kts. Armament: 4 4.7"/50 in twin mounts behind small shields; 4 37 mm AA; 4 13 mm AA; 6 21" TT in triple mounts; fitted as minelayers.

Modern Italian destroyers, as may be noted in this—the only class of Italian destroyer which seems to have remained intact—and other classes, all mount their main armament in pairs, even in smaller vessels, a practice confined in other countries to larger vessels, and even then not always adhered to.

7 to 9 Navigatori Class

Photo Page 172

LANZEROTTO MALOCELLO (1929), UGOLINO VIVALDI (1929), ANTONIOTTO USODIMARE (1929), LEONE PANCALDO (1929), ANTONIO DA NOLI (1929), EMANUELO PESSAGNO (1930), NICOLOSO DA RECCO (1930), NICOLO ZENO (1928), ANTONIO PIGAFETTA (1929), GIOVANNI DA VERAZZANO (1928). (Ten names listed; one unidentified was sunk by a British submarine). Standard Displacement: 1,628 tons. Dimensions: 352' x 33' 6" x 16' 9". Propulsion: Two screws, two sets geared turbines, 50,000 SHP. Speed: 38 kts. Armament: 6 4.7"/50 in twin mounts behind large shields; 4 37 mm AA; 6 13 mm AA; 4 21" TT in pairs; all fitted as minelayers (capacity of some: 50 mines).

Besides the unidentified Navigatori class vessel listed as sunk above, the *Giovanni da Verazzano* and the *Leone Pancaldo* may be sunk. Definitely sunk Navigatori are the *Alvise da Mosto*, *Luca Tarigo*. The Navigatori are named after Italian navigators of the Middle Ages and the age of discovery. Note the Navigatori's draught, unusually deep for destroyers.

2 or 3 Turbine Class

BOREA (1927), TURBINE (1927), EURO (1927). Standard Displacement: 1,073 tons (*Borea*), 1,092 (others). Dimensions: 307' 6" x 30' 6" x 10' 9". Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 36 kts. Armament: 4 4.7"/45 in pairs behind small shields; 4 37 mm AA; 2 13 mm AA; 6 21" TT in triple mounts; fitted as minelayers.

Italian destroyers of the 'twenties seem to have suffered particularly heavily in the Mediterranean war. The *Euro*, listed above, may have been sunk, as have five other Turbines,—*Espero*, *Aquilone*, *Nembo*, *Ostro* and *Zefferio*. (Turbine units are named for the elements). Two preceding classes, the *Leone* of three vessels and *Manin* of four, have both been wiped out completely.

2 Sella Class

FRANCESCO CRISPI (1925), QUINTINO SELLA (1925). Standard Displacement: 935 tons. Dimensions: 275' 6" x 27' x 9' 9". Propulsion: Two screws, two sets geared turbines, 36,000 SHP. Speed: 35 kts. Armament: 4 4.7"/45 in pairs behind small shields; 2 40 mm AA; some smaller; 4 21" TT in pairs; fitted as minelayers.

Two other units of this class, the *Nicatero* and *Ricasoli*, were sold to Sweden in 1940.

2 Mirabello Class

CARLO MIRABELLO (1914), AUGUSTO RIBOTY (1915). Standard Displacement: 1,383 tons. Dimensions: 331' S" p.p. x 32' x 10' 6". Propulsion: Two screws, two sets geared turbines, 35,000 SHP. Speed: 35 kts. Guns: 8 4" in single mounts; 2 40 mm AA; some smaller; 4 18" TT in pairs (each pair can fire only on one side); 100 mines.

ITALY - TORPEDO BOATS

17 or 18 Partenope Class

Photo Page 172

PARTENOPE (1938), POLLUCE (1937), PALLADE (1937), PLEIADI (1937), LIRA (1937), LINCE (1938), LIRA (1937), LUPO (1937), AIRONE (1938), ARETUSA (1938), CALIPSO (1938), CALLIOPE (1938), CIRCE (1938), CLIO (1938), plus four unnamed completed during war. Standard Displacement: 679 tons. Dimensions: 267' x 26' x 7' 9". Propulsion: Two screws, two sets geared turbines, 19,000 SHP. Speed: 34 kts. Armament: 3 3.9"/47; 6 37 mm AA; 2 13 mm AA; 4 18" TT in pairs in all except *Libro*, *Lince*, *Lira*, *Lupo*, in which they are in a pair and two singles; 2 DCT; fitted as minelayers.

Airone, listed above, possibly sunk; definitely lost, *Alcione* and *Ariel*.

11 Climene Class

Photo Page 172

CENTAURO (1936), CLIMENE (1936), CASTORE (1936), CIGNO (1936), CANOPO (1936), CASSIOPEA (1936), SIRIO (1935), PERSEO (1936), ALDEBARAN (1936), ANTARES (1936), ANDROMEDA (1936). Standard Displacement: 652 tons (first six), 642 (others). Dimensions: 267' (first six), 269' (others) x 27' x 7' 6" (first six), 7' (others). Propulsion: Two screws, two sets geared turbines, 19,000 SHP. Speed: 34 kts. Armament: 3 3.9"/47; 6 37 mm AA; 2 13 mm AA; 4 18" TT (a pair and two singles in *Centauro* and *Climene*, four singles in others); 2 DCT; fitted as minelayers.

Two units of this type have gone down: *Altair* and *Sagittario*. Two others, *Astore* and *Spica*, were sold to Sweden, in whose navy they are now the *Romulus* and *Remus*.

4 Orsa Class

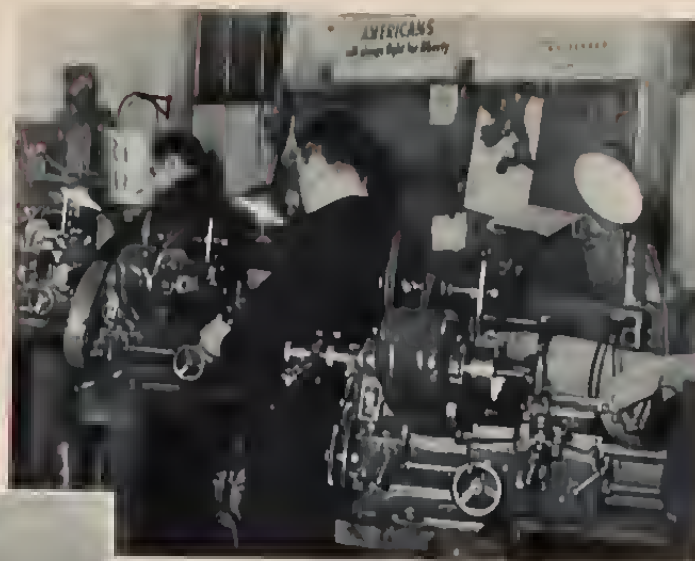
ORSA (1937), ORIONE (1937), PEGASO (1936), PROCIONE (1937). Standard Displacement: 855 tons. Dimensions: 292' 9" x 31' x 11' 6". Propulsion: Two screws, two sets geared turbines, 16,000 SHP. Speed: 28 kts. Armament: 2 3.9"/47; several machine guns; 4 18" TT in pairs; 6 DCT.

The Orsas were built as escort vessels, but were re-rated in 1939.



CARL W. SCHUTTER

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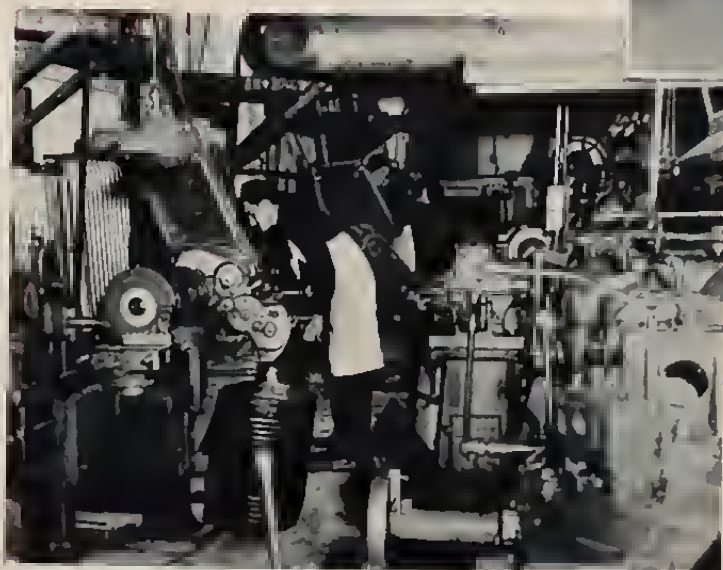
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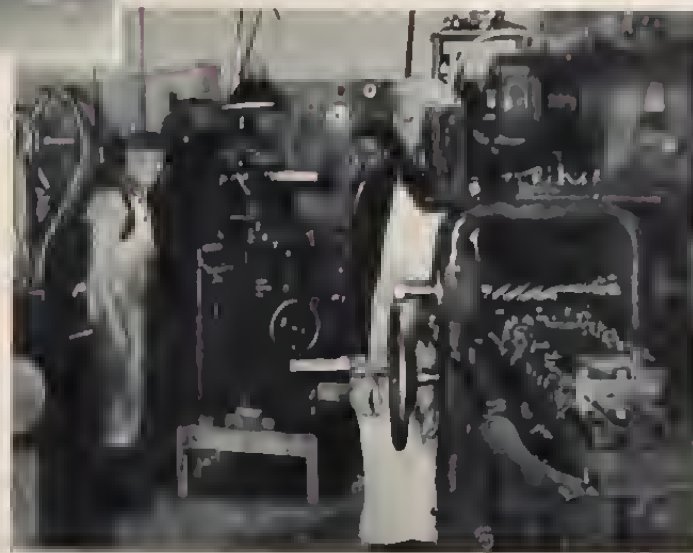


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1 Albatros Class

ALBATROS (1934). Standard Displacement: 340 tons. Dimensions: 231' 4" x 22' 6" x 6'. Propulsion: Two screws, two sets geared turbines, 4,000 SHP. Speed: 24.5 kts. Armament: 2 3.9"/47; 4 37 mm AA; 2 18" TT; 4 DCT; fitted as minelayer.

The *Albatros* was originally a sub chaser.

3 or 4 Curtatone Class

CALATAFIMI (1923), CASTELFIDARDO (1923), CURTATONE (1922), MONZAMBANO (1923). Standard Displacement: 966 tons. Dimensions: 262' 6" x 24' 8" x 8' 6". Propulsion: Two screws, two sets geared turbines, 22,000 SHP. Speed: 32 kts. Armament: 4 4" in pairs; 2 3" AA; 6 18" TT in triple mounts; fitted as minelayers (can carry 10 mines).

The *Curtatone* may have been sunk.

2 Solferino Class

SOLFERINO (1920), SAN MARTINO (1920). Standard Displacement: 862 tons. Dimensions: 256' 6" pp. x 24' 8" x 8' 6". Propulsion: Two screws, two sets geared turbines, 22,000 SHP. Speed: 32 kts. Armament: 4 4" mounted singly; 2 3" AA; some smaller; 4 18" TT in pairs; fitted as minelayers (can carry 10 mines).

The *Palestra* and *Confianza* of this class have been sunk.

6 Generali Class

GENERALE ACHILLE PAPA (1921), GENERALE ANTONIO CANTORE (1921), GENERALE ANTONIO CHINOTTO (1921), GENERALE ANTONINO CASCINO (1922), GENERALE CARLO MONTANARI (1922), GENERALE MARCELLO PRESTINARI (1922). Standard Displacement: 635 tons. Dimensions: 237' 10" x 23' 10" x 9'. Propulsion: Geared turbines, 18,000 SHP. Speed: 33 kts. Armament: 3 4"; 2 3" AA; some smaller; 4 18" TT in pairs; fitted as minelayers.

The *Generali*, *Cosenz* and *Sirtori* classes have almost identical hulls. Their armaments, however, differ.

1 Giovannini Class

ERNESTO GIOVANNINI (1921). Standard Displacement: 182 tons. Dimensions: 170' 6" x 19' x 5' 8". Propulsion: Two screws, two sets triple expansion engines, 2,400 SHP. Speed: 23 kts. Armament: 2 4"/35; machine guns; 2 18" TT paired; fitted as minelayers.

The *Ernesto Giovannini* is the sole survivor of a class of six once rated as escort vessels, the others of which have been scrapped.

6 Cosenz Class

ENRICO COSENZ (ex-*Agostino Bertani*, 1917), GIACOMO MEDICI (1917), GIUSEPPE LA FARINA (1917), ANGELO BASSINI (1916), GIACINTO CARINI (1916), GIUSEPPE LA MASA (1916). Standard Displacement: 635 tons. Dimensions: 238' p.p. x 24' x 9' 2". Propulsion: Two screws, two sets geared turbines, 15,500 SHP. Speed: 32 kts. Armament: 4 4"; 2 3" AA; machine guns; 4 18" TT in twin mounts.

Nicola Fabrizi of this type lost in this war, and *Benedeto Cairoli*, in World War I.

2 Sirtori Class

FRANCESCO STOCCO (1916), GIUSEPPE SIRTORI (1916). Standard Displacement: 669 tons. Dimensions: 238' p.p. x 24' x 9' 2". Propulsion: Two screws, two sets geared turbines, 15,500 SHP. Speed: 32 kts. Armament: 6 4"; 2 40 mm AA; machine guns; 4 18" TT in pairs; fitted as minelayers (capacity: 10 mines).

A sister, *Giovanni Acerbi*, was sunk by British planes in the Red Sea in 1941.

7 Abba Class

ROSOLINO PILO (1914), GIUSEPPE A88A (1914), SIMONE SCHIAFFINO (1914), GIUSEPPE DEZZA (ex-*Pilade Bronzetti*, 1914), GIUSEPPE MISSORI (1914), FRATELLI CAIROLI (ex-*Francesco Nullo*), ANTONIO MOSTO (1914). Standard Displacement: 615 tons. Dimensions: 236' 5" p.p. x 24' x 8' 10". Propulsion: Two screws, two sets geared turbines, 15,500 SHP. Speed: 32 kts. Armament: 5 4"; 2 40 mm AA; machine guns; 4 18" TT in single mounts.

1 Audace Class

AUDACE (ex-Japanese *Kawakaze*, built in England, 1915). Standard Displacement: 629 tons. Dimensions: 283' x 27' 4" x 9' 6". Propulsion: Two screws, two sets geared turbines, 22,000 SHP. Speed: 31 kts. Armament: 7 4"; 2 40 mm AA; machine guns; 4 18" TT in pairs.

ITALY - SUBMARINES

Through October, 1943, Italy had lost a minimum of 55 or 60 submarines. However, only 32 of them have been identified. Full information is not yet available despite the movement of a large part of the Italian fleet and naval staff to the Allied base of Malta. Reports on the number of Italian submarines now in Allied hands are conflicting. Others were certainly seized by the Germans.

OCEAN-GOING TYPES

2 to 8 St. Bon Class

AMMIRAGLIO ST. BON, AMMIRAGLIO CAGNI (both 1940), plus six others authorized 1939. Displacement: Surface, 1,461 tons; submerged, unreported. Dimensions: 288' 4" x 25' 6" x 17'. Propulsion: Diesels (4,600 SHP) and electric motors. Speed: Surface, 18 kts.; submerged, unreported. Armament: 14 18" TT; 2 3.9"/47; 4 MG.

The St. Bon class, two of which, *Ammiraglio Caracciolo* and *Ammiraglio Enrico Millo*, are known to have been sunk, are unique among modern submarines in their use of 18" torpedoes, which have not been employed by submarines of any major navy for nearly two decades. It is not known whether the six unnamed St. Bons were actually built.

2 Bagnolini Class

ALPINO ATTILIO BAGNOLINI, REGINALDO GIULIANI (both 1939). Displacement: Surface, 1,031 tons; submerged, unreported. Dimensions: 252' 6" x 23' x 13' 9". Propulsion: Diesels (3,500 SHP) and electric motors. Speed: Surface, 18 kts.; submerged, unreported. Armament: 8 21" TT; 2 3.9"/47; 4 MG.

Capitano Raffaele Tarantini and *Console Generale Liuzzi*, sunk in 1942, were of the Bagnolini class.

5 Marconi Class

GUGLIELMO MARCONI (1939); ALESSANDRO MALASPINA, LEONARDO DA VINCI, LUIGI TORELLI, MAGGIORE FRANCESCO BARACCA (all 1940). Displacement: Surface, 1,036 tons; submerged, unreported. Dimensions: 251' x 22' 4" x 15' 6". Propulsion: Diesels (3,600 SHP) and electric motors. Speed: Surface, 18 kts.; submerged, unreported. Armament: 8 21" TT; 2 3.9"/47; 4 MG.

A third boat of this type, *Michele Bianchi*, has been lost.

2 Cappellini Class

COMMANDANTE CAPPELLINI, COMMANDANTE FAA DI BRUNO (both 1939). Displacement: Surface, 951 tons; submerged, 1,270. Dimensions: 239' 6" x 23' 8" x 15'. Propulsion: Diesels (3,000 SHP) and electric motors (800 SHP). Speed: Surface, 17 kts.; submerged, 9. Armament: 8 21" TT; 2 3.9"/47; 4 MG.

The Cappellinis resemble the Dandolo.

6 Dandolo Class

DANDOLO, MOCENIGO (both 1938); BARBARIGO, MOROSINI, PROVANA, VENIERO (all 1939). Displacement: Surface, 941 tons; submerged, 1,260. Dimensions: 239' 6" x 23' 8" x 15' 6". Propulsion: Diesels (3,000 SHP) and electric motors (800 SHP). Speed: Surface, 17 kts.; submerged, 9. Armament: 8 21"; 2 3.9"/47; 2 13 mm AA.

Dandolo type craft lost are the *Emo*, *Marcello* and *Nani*.

2 Brin Class

BRIN, GUGLIELMOTTI (both 1938). Displacement: Surface, 896 tons; submerged, 1,247. Dimensions: 231' x 22' 6" x 13' 6". Propulsion: Diesels (3,000 SHP) and electric motors (840 SHP). Speed: Surface, 17 kts.; submerged, 9. Armament: 8 21" TT; 1 3.9"/47; 2 13 mm AA.

Galvani of this type has been lost. Gun is mounted in conning tower instead of on deck.

3 Foca Class

FOCA, ZOEA (both 1937); ATROPO (1938). Displacement: Surface, 1,121 tons (*Atropo*), 1,109 (others); submerged, 1,533. Dimensions: 255' 3" (*Atropo*), 266' 9" (others) x 23' 6" x 15' 3" (*Atropo*), 12' 4" (others). Propulsion: Diesels (2,880 SHP) and electric motors (1,250 SHP). Speed: Surface, 16 kts.; submerged, 8. Armament: 8 21" TT; 1 3.9"/47; 2 13 mm AA; fitted as minelayers, having two mine discharging chutes.

Foca may have been lost. Gun of this type is in conning tower, not, as in most submarines, on deck.

2 Finzi Class

ENRICO TAZZOLI, GIUSEPPE FINZI (both 1935). Displacement: Surface, 1,332 tons; submerged, 1,995. Dimensions: 276' 6" x 25' 4" x 13'. Propulsion: Diesels (4,400 SHP) and electric motors (1,800). Speed: Surface, 17 kts.; submerged, 8.75. Armament: 8 21" (six bow, four stern); 2 4.7"/45; 4 13 mm AA.

The Finzis are modifications of the Balilla class. *Pietro Calvi*, a Finzi, was rammed and sunk by *H.M.S. Lulworth*, (ex-*Chelan*, one of ten American Coast Guard cutters transferred to the Royal Navy).

1 Otaria Class

Photo Page 173

OTARIA (1935). Displacement: Surface, 863 tons; submerged, 1,167. Dimensions: 239' 6" x 23' 6" x 14' 6". Propulsion: Diesels (3,000 SHP) and electric motors (1,400 SHP). Speed: Surface, 17 kts.; submerged, 8.5. Armament: 8 21"; 2 3.9"/47; 2 13 mm AA.

Glaucio, the *Otario's* one sister, was sunk by a French patrol vessel, *La Curieuse*, in the brief period between Mussolini's "back stabbing" declaration of war and the French armistice. She is the only Italian submarine known to have been sunk by the pre-collapse French.

1 Micca Class

PIETRO MICCA (1935). Displacement: Surface, 1,371 tons; submerged, 1,883. Dimensions: 296' 3" x 25' 3" x 17' 4". Propulsion: Diesels (3,000 SHP) and electric motors (1,600 SHP). Speed: Surface, 15.5 kts.; submerged, 8.5. Armament: 6 21" TT (all in bow); 2 4.7"/45; 4 13 mm AA; fitted as minelayer, capacity: 40 mines.

1 Archimede Class

ARCHIMEDE (1933). Displacement: Surface, 880 tons; submerged, 1,231 tons. Dimensions: 231' 6" x 22' 8" x 13'. Propulsion: Diesels (3,000 SHP) and electric motors (1,300 SHP). Speed: Surface, 17 kts.; submerged, 8.5 kts. Armament: 8 21" TT; 2 3.9"/47; 2 13 mm AA.

The *Archimede* is the sole survivor of a class of four. Lost units are the *Evangelista Torricelli*, *Gallileo Ferraris* and *Gallileo Galilei* (captured by *H. M. S. Moonstone* in the Red Sea in 1940).

1 Fieramosca Class

ETTORE FIERAMOSCA (1929). Displacement: Surface, 1,340 tons; submerged, 1,788. Dimensions: 270' 3" x 27' 3" x 14' 9". Propulsion: Diesels (5,500 SHP) and electric motors (2,000 SHP). Speed: Surface, 19 kts.; submerged, 10 kts. Armament: 8 21" TT; 1 4.7"/45; 4 13 mm AA.

The *Fieramosca*, the fastest submarine above and below the surface in the Italian navy, is fitted to carry a small seaplane.

4 Balilla Class

Photo Page 173

BALILLA, DOMENICO MILLELIRE (both 1927); ANTONIO SCIESA, ENRICO TOTI (both 1928). Displacement: Surface, 1,368 tons; submerged, 1,874 tons. Dimensions: 282' x 24' 6"

x 14'. Propulsion: Diesels (4,400 SHP) and electric motors (2,200 SHP). Speed: Surface, 17.5 kts.; submerged, 9.5 kts. Armament: 6 21" TT (four bow, two stern); 1 4.7"/45; 4 13 mm AA.

The Balilla class are reported to be of unusually strong construction to permit deep diving. *Millelire* reached a depth of 266 feet on her trials, good for a submarine of her date of construction. The Balilla class is also unusual in being without bow hydroplanes.

COASTAL TYPES

4 Cobalto Class

Under authorization of 1939, six submarines of a type understood to be similar to the *Perla* were built in 1940-41. The only names known are of two vessels sunk, the *Cobalto* and *Asteria*.

18 Perla Class

ADUA, ALAGI, AMBRA, ARADAM, AXUM, CORALLO, DAGABUR, DESSIE, DIASPRO, MALACHITE, ONICE, PERLA, TURCHESE (all 1936); ASCIANGHI, UARSCIEK (both 1937); SEILUL, SCIRE, TEMBIEN (all 1938). Displacement: Surface, varies from 613 to 620 tons; submerged, 853. Dimensions: 197' 6" x 21' x 13'. Propulsion: Diesels (1,350 SHP) and electric motors (800 SHP). Speed: Surface, 14 kts.; submerged, 8.5. Armament: 6 21" TT; 1 3.9"/47; 2 13 mm AA.

Nine of the Perlas (which are named after precious stones and towns in the former Italian colonial empire) have been lost. They are *Berillo*, *Durbo*, *Gemma*, *Gondar*, *Iride*, *Lafale*, *Macalle*, *Neghelli* and *Uebi Scebeli*.

2 Argo Class

ARGO, VELELLA (both 1936). Displacement: Surface, 689 tons; submerged, 857. Dimensions: 206' 9" x 22' 6" x 10' 6". Propulsion: Diesels (1,350 SHP) and electric motors (800 SHP). Speed: Surface, 14 kts.; submerged, 8. Armament: 6 21" (all in bow); 1 3.9"/47; 2 MG.

The Argos were begun in an Italian yard for the Portuguese government but, on cancellation of the contracts, were taken over by Italy.

8 Sirena Class

AMETISTA, GALATEA, NEREIDE, ONDINA, SIRENA, SMERALDO, TOPAZIO, ZAFFIRO (all 1933). Displacement: Surface, 590 tons; submerged, 787. Dimensions: 197' 6" x 21' x 12'. Propulsion: Diesels (1,350 SHP) and electric motors (800 SHP). Speed: Surface, 14 kts.; submerged, 8.5. Armament: 6 21" TT; 1 3.9"/47; 2 13 mm AA.

Anfritrite, *Diamante*, *Naiade* and *Rubino* of the Sirena class have all been sunk.

5 Fisalia Class

FISALIA, MEDUSA (both 1931); JALEA, JANTINA, SALPA, SERPENTE (all 1932). Displacement: Surface, 599 tons; submerged, 778. Dimensions: 218' (*Salpo*, *Serpente*), 201' 9" (others) x 18' 6" x 14' 6". Propulsion: Diesels (1,200 SHP) and electric motors (800 SHP). Speed: Surface, 14 kts.; submerged, 8.5. Armament: 6 21" TT; 1 4"/35; 2 13 mm AA.

One of the above vessels, positively identified as a Fisalia, though its exact identity is in doubt, was sunk in the Mediterranean in 1942. *Argonauta* of Fisalia type has also been lost.

2 Settembrini Class

LUIGI SETTEMBRINI (1930), RUGGIERO SETTIMO (1931). Displacement: Surface, 798 tons; submerged, 1,194. Dimensions: 226' 9" x 25' 4" x 11' 10". Propulsion: Diesels (3,000 SHP) and electric motors (1,400 SHP). Speed: Surface, 17.5 kts.; submerged, 9. Armament: 8 21" TT; 1 4"/35; 2 13 mm AA.

4 Squalo Class

DELFINO, NARVALO, SQUALO, TRICHECO (all 1930). Displacement: Surface, 810 tons; submerged, 1,077. Dimensions: 229' x 18' 9" x 16' 3". Propulsion: Diesels (3,000 SHP) and electric motors (1,400 SHP). Speed: Surface, 16.5 kts.; submerged, 9 kts. Armament: 8 21" TT; 1 4"/35; 2 13 mm AA.

2 Corridoni Class

MARCANTONIO BRAGADINO (1929), FILIPPO CORRIDONI (1930). Displacement: Surface, 234' 6" x 20' x 13' 6". Propulsion: Diesels (1,500 SHP) and electric motors (1,000 SHP). Speed: Surface, 14 kts.; submerged, 8. Armament: 4 21" TT; 1 4"/35; 2 MG; fitted as minelayers, two chutes, 24 mines.

4 Santarosa Class

CIRO MENOTTI, FRATELLI BANDIERA, LUCIANO MANARA, SANTORRE SANTAROSA (all 1929). Displacement: Surface, 815 tons; submerged, 1,078. Dimensions: 229' x 23' 8" x 13' 4". Propulsion: Diesels (3,000 SHP) and electric motors (1,300 SHP). Speed: Surface, 17.5 kts.; submerged, 9. Armament: 8 21" TT; 1 4"/35; 3 13 mm AA.

The Santarosas are modified Pisanis.

4 Pisani Class

MARCANTONIO COLONNA, VITTOR PISANI (both 1927); AMMIRAGLIO DES GENEYS, GIOVANNI BAUSAN (both 1928). Displacement: Surface, 791 tons; submerged, 1,040. Dimensions: 223' x 19' x 14'. Propulsion: Diesels (2,700 SHP) and electric motors (1,200 SHP). Speed: Surface, 17.5 kts.; submerged, 9. Armament: 6 21" TT; 1 4"/35; 2 13 mm AA.

3 Mameli Class

GOFFREDO MAMELI (ex-Masantello, 1926); GIOVANNI DA PROCIDA, TITO SPERI (both 1928). Displacement: Surface, 770 tons; submerged, 994. Dimensions: 213' 3" x 21' 3" x 13'. Propulsion: Diesels (3,000 SHP) and electric motors (1,100 SHP). Speed: Surface, 17 kts.; submerged, 9. Armament: 6 21" TT; 1 4"/35; 2 13 mm AA.

A fourth vessel of the Mameli class is the *Pier Capponi*, lost in 1940.

5 H Class

H-1, H-2 (both 1916); H-4, H-6, H-8 (all 1917). Displacement: Surface, 336 tons; submerged, 434. Dimensions: 150' 3" x 15' 9" x 12' 4". Propulsion: Diesels (480 SHP) and electric motors (620 SHP). Speed: Surface, 13 kts.; submerged, 11. Armament: 4 18" TT (all in bow); other armament removed.

H class submarines, which were built for Italy during the last war at Montreal to an Electric Boat Co. design, are now used exclusively for training. H-5 was lost during the last war; H-3 and H-7 have been scrapped.

2 X Class

X-2, X-3 (1916). Displacement: Surface, 389 tons; submerged, 453. Dimensions: 140' x 18' x 13'. Propulsion: Diesels (660 SHP) and electric motors (320 SHP). Speed: Surface, 10 kts.; submerged, 6. Armament: 2 18" tubes in bow; 1 MG; fitted as minelayers, carrying 18 mines in 9 chutes. The X type is also used for training.

Midget Submarines

Italy is reported to have built a number of four-man midget submarines (they would be somewhat larger than corresponding British and Japanese types), but reports of their existence have not been reliably confirmed.

ITALY-AUXILIARIES AND SPECIAL TYPES

SLOOPs

DIANA (Fiume, 1940). Standard Displacement: 1,568 tons. 355' 8" x 36' 9" x 9' 6". Two screws, geared turbines, 30,000 SHP. Speed: 28 kts. Armament: 2 3.5", 4 MG AA. Italian sloops are *Nave Coloniale*, "colonial ships," i.e., "law-and-order" vessels. *Diana* may be the vessel Rome admitted lost off Tunisia on Feb. 1, 1943.

ERITREA (Castellamare, 1936). Standard Displacement: 2,172 tons. 274' x 43' 8" x 11' 6". Two screws, Diesel-electric drive, 8,000 HP. Speed: 20 kts. Armament: 4 4.7", 4 37 mm AA, 2 13 mm AA; fitted for minelaying. *Eritreo*, stationed in Far East before the war, was last reported in a Japanese port and may have been seized by the Japanese following the ouster of Mussolini and surrender of Italy.

MOTOR TORPEDO BOATS

Photo Page 173

M.A.S. 451, 452, 501-SS1 (1936-1939). About 20 tons, 69' x 14' 9" x 4' 6", 47 kts., 2 18" TT plus 1 or 2 AA MG.

STEFANO TURR (1935). 59 tons, 105' x 18' x 2' 9", 4 high speed Diesels, about 30 kts., 3 AA MG, 4 18" TT.

M.A.S. 438-441 (1935). 35.5 tons, 36 kts.

M.A.S. 431 (1931). 15 tons, 40 kts., 2 MG, 2 TT, 5 DC.

M.A.S. 423, 424, 426, 430, 432, 433, 434, 437 (1923-1930). 13.5 to 14 tons, 40 kts., 2 MG, 2 TT, 5 DC.

MINELAYERS

Besides vessels listed below, all Italian destroyers, most torpedo boats, the *Foca*, *Micca* and *Corridoni* class submarines, surveying vessel *Cariddi*, cruisers *Bari* and *Taranto*, and many transports and water carriers are equipped for sowing mines.

Ostia Class: OSTIA (1925), LEGNANO (1926), AZIO, LEPANTO (both 1927). 615 tons, 15 kts., 2 4"/35, 1 3" AA, 2 MG, 80 mines.

Fasana Class: FASANA (1924), BUCCARI, DURAZZO, PELAGOSA (all 1926). 531 tons, 10 kts., 1 3" AA, 54 mines.

Albona Class: ALBONA, ROVIGNO (both 1919), LAURANA (1920). 113 tons, 11 kts., 1 3".

Cotrone Class: COTRONE (ex-*Abastro*, ex-German *M120*), VIESTE (ex-*Meteo*, ex-German *M119*), both 1918. 359 tons, 14 kts., 2 4". One of these two minelayers was lost in 1941, torpedoed by a British submarine.

MINESWEEPERS

RD 1 (1938). 188 tons, 10 kts., 1 3".

VEDETTA, VIGILANTE (both 1937). 70 tons, 12 kts., 1 3".

An additional 38 ships (numbered variously RD 4-57) are also employed as minesweepers. Average displacement is 160 tons, speed 14 kts., armament 1 3" AA.

GUNBOATS

MARIO SONZINI (ex-*Acciugo*), PELLEGRINO MATTEUCCI (ex-*Merluzzo*), both 1924. 620 tons, 9 kts., 2 3", 1 MG. A third vessel of this class, *Giovanni Berta*, was sunk by British naval aircraft at Tobruk, 1940.

ERMANNIO CARLOTTO (1921). 180 tons, 14 kts., 2 3" AA, 6 MG.

ILLIRIA (ex-*Cité d'Athènes*, ex-*Gardon*, 1918). 654 tons, 11 kts., 2 3".

In 1917 the five gunboats listed below, some fitted for minesweeping, were acquired from Japan:

ALULA (ex-G 23, ex-*Sekijya Maru*, 1912). 308 tons, 13 kts., 1 3" AA.

CIRENE (ex-G 13, ex-*Hoyo Maru*, 1912). 383 tons, 9 kts., 2 3" AA, 1 MG.

GALLIPOLI (ex-G 31, ex-*Hakata Maru*, 1911). 310 tons, 10 kts., 2 3" AA.

OTRANTO (ex-G 36, ex-*Sumiye Maru*, ex-*Mariveles*, 1911). 290 tons, 9.5 kts., 2 3" AA.

RIMINI (ex-G 16, ex-*Fuku Maru*, 1912). 319 tons, 9.5 kts., 1 3" AA.

PALMAIOLA (ex-*Mary*, 1902). 472 tons, 8.5 kts., 1 3" AA.



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AUXILIARY PATROL VESSELS AND MINESWEEPERS

In January, 1940, the Italian navy bought 116 Diesel fishing vessels, 31 of which were officially reported converted into auxiliary patrol vessels, and the remainder, to auxiliary minesweepers. Many more were doubtless acquired after the Italian declaration of war on the Allies.

MISCELLANEOUS AUXILIARIES

ADIGE (1928). Water tanker, fitted for minelaying. 789 tons, 8 kts., 4 MG.
ALESSANDRO VOLTA (ex-*Caprero*, 1921). Submarine tender. 2,727 tons, 19 kts., 4 3" AA.
AMERIGO VESPUCCI (1930). Training ship. 3,543 tons, 22,600 square feet sail area, 10.5 kts., 4 3" AA, 2 MG.
AMMIRAGLIO MAGNAGHI (1914). Surveying ship. 1,506 tons, 10.5 kts., 4 3".
ANTEO (1912). Submarine salvage vessel. 1,252 tons, 8 kts., 2 cranes with 200-ton lift capacity each.
ARNO, BRENTA (1929). Sister ship water tankers. 635 tons, 9 kts.
ASMARA (ex-*Nasina*, ex-*Melssonier*, 1915). 6,850 tons, 12.5 kts.
ATLANTE, ERCOLE (both 1928), AUSONIA (1920). Tugs. 355 tons, 11 kts., 1 3".
AURORA (ex-*Marechiaro*, ex-*Taurus*, ex-*Nirvana*, 1904). Admiralty yacht. 935 tons, about 15 kts., 2 S7 mm.
BORMIDA, MINCIO (1929). Sister ship water tankers. 645 tons, 9 kts.
CARIDDI (ex-*G 21*, ex-*Nishio Maru*, 1911). Surveying ship, fitted for minelaying. 330 tons, 10 kts., 1 3".
CERERE (ex-*Baltrum*, 1915). Oiler. 2,530 tons, 10 kts., 2 3" AA, 1,500-ton capacity.
CHERSO (ex-*Amalfi*), LUSSIN (ex-*Marsala*), both 1912. Transports. 3,988 tons, about 10 kts., 4 4.7", 2 3" AA.
CICLOPE (1903). Salvage vessel. 1,050 tons, 13.5 kts., 1 3".
CITTA DI MILANO (ex-*Grossherzog Von Oldenburg*, 1905). Research ship. 5,295 tons, 11 kts., 2 37 mm AA.
CITTA DI SIRACUSA (1910). Distilling vessel. 3,593 tons, 20 kts., 2 3" AA.
COCITO, LETE (1915). Oilers. 1,163 tons, 10 kts., 3 3" AA.
CRISTOFORO COLOMBO (1928). Training ship. 2,787 tons, 18,700 square feet sail area, 10 kts., 4 3" AA, 2 MG.
DALMAZIA (1922), ISTRIA (1923). Water tankers. 2,900 tons, 10 kts., 1 4.7", 1 3" AA.
DANTE DE LUTTI (ex-*G 34*, ex-*Tomiye Maru*, 1911). Lighthouse tender. 266 tons, 12 kts., 2 3".
ENRICHETTA (ex-*Presto*, ex-*Alberto Fassini*, ex-*Kossuth Ferencz*, 1907). Transport. 8,360 tons, 9.5 kts.
FAVIGNANA (1918). Tug. 320 tons, 10 kts., 2 3".
FLEGETONTE (1915). Water tanker, sister to oilers *Cocito* and *Lete*. 1,163 tons, 9 kts., 3 3" AA.
FRIGIDO (ex-*Fukuju Maru*, 1912). Water tanker. 398 tons, 9 kts., 2 MG.
GAGLIARDO, ROBUSTO, TENACE, VIGOROSO (all 1939). Tugs. 389 tons, 12 kts.
GARDA, METAURO, SEBETO, SILE, VERBANO (all 1933). Water tankers. 592 tons, 9 kts.
GARIGLIANO (1934), SESIA (1933). Water tankers, fitted for minelaying. 1,050 tons, 9.5 kts., 4 MG.
GIASONE (1929). Research vessel. 1,191 tons, 15 kts., 2 3" AA.
ISONZO (1937), PO, VOLTURNO (both 1936). Water tankers. 3,336 tons, 11.5 kts., 2 4.7", 4 MG AA.
LEVANZO (ex-*Tiburon*, ex-*Nankeen*, 1906), LIDO (1907). Lighthouse tenders. 226 tons; 11 kts., 2 3" (*Levanzo*); 12 kts., 1 3" (*Lido*).
LIPARI (1917). Tug. 250 tons, 10 kts., 1 3".

LUIGI FERDINANDO MARSIGLI (ex-*Tremiti*, 1916), EGADI, MARITTIMO (both 1915). LUNI (1914). Tugs. 337 tons, 12 kts., 1 3".

MARIO BIANCO (ex-*G 24*, ex-*Fukuhaku Maru*, ex-*Yoshida Maru*, 1911). Lighthouse tender. 258 tons, 11.5 kts., 2 3".

MARTE (ex-Austrian *Vesta*, 1892). Oiler. 4,695 tons, 10 kts., 2 3" AA.

MONTECRISTO (1916). Tug. 340 tons, 10 kts., 1 3".

NEREO (1936). Tug. 340 tons, 11 kts., 1 3".

NETTUNO (1916). Oiler. 9,540 tons, 14 kts., 3 4.7", 2 3" AA.

NIOBE (ex-German *Syllt*, 1916). Oiler. 3,160 tons, 11 kts., 3 3" AA, 2,000-ton capacity.

PAGANO, VERDE (1921). Water tankers. 1,432 tons, 7.5 kts., 1 4.7", 1 3" AA, 950-ton capacity.

PANIGAGLIA (1923), BUFFOLUTO, VALLELUNGA (both 1924). Transports, fitted for minelaying. 915 tons, 11 kts., 2 3.9"/47, 1 MG.

POLIFEMO (ex-*Einigkeit*, 1916). Tug and salvage vessel. 1,035 tons, 12 kts.

PORTO EMPEDOCLE (1914). Tug. 330 tons, 11 kts., 1 3".

PROMETEO (ex-*Ostia*, 1920). Oiler. 1,080 tons, 10 kts., 2 3" AA.

QUARNARO (1924). Repair ship. 7,185 tons, 11.5 kts., 3 4" AA.

RAPALLO, TAORMINA (both 1937). Tugs. 276 tons, 10 kts., 1 3".

RICCARDO GRAZIOLI LANTE (ex-*Abisso*, ex-*Falco*, ex-*Petrel*, 1912). Lighthouse tender. 295 tons, 12 kts., 2 3".

SALVORE, TINO, PANTELLARIA, PORTO FERRAIO, PORTO TORRES, PORTO CONTE, PORTO ERCOLE, PORTO QUIETO, PORTO SDOBBA, PORTO FOSSONE, PORTO VENERE, PORTO BUSO, PORTO RECANATI, PORTO SALVO, PORTO PISANO, MISENO, PALINURO (launched 1929-1937). Tugs. 223-226 tons, 11 kts., 1 3".

SAN MARCO (1908). Target ship, wireless controlled. 8,600 tons, 18 kts., no armament.

SAVOIA (ex-*Citta di Palermo*, 1923). Royal yacht. 5,280 tons, 22 kts., 4 3" AA.

SCILLA (ex-*Panaria*, ex-*Fantasma*, ex-*Lord Charles Beresford*, 1904). Lighthouse tender. 350 tons, 9 kts., 1 3".

SCRIVIA, TIRSO (both 1937). Water tankers, fitted for minelaying. 1,086 tons, 9.5 kts., 4 MG.

SEBASTIANO CABOTO (1912). Submarine tender. 778 tons, 13 kts., 6 3", 4 MG.

STEROPE (launch date unreported). Oiler. 19,600 tons, 14 kts.

TANARO, VELINO (both 1940). Water tankers. 1,430 tons, 10.5 kts., 2 3".

TARVISIO (1927). Oiler. 10,915 tons, 10 kts., 4 4.7", 2 3" AA, 8,000-ton capacity.

TESEO (ex-*Semper Paratus*, ex-*H. M. S. Buttercup*, 1915). Salvage vessel. 1,250 tons, 16 kts., 2 3".

TICINO (1924). Water tanker. 2,588 tons, 9.5 kts., 2 3".

TITANO (1913). Submarine salvage ship. 828 tons, 14 kts., 1 3".

TRIPOLI (1922). Transport. 2,460 tons, 8.5 kts., armament unreported.

URANO (1922). Oiler. 10,550 tons, 11 kts., 2 4.7", 2 3" AA, 2 MG, 8,000-ton capacity.

ITALY - AIRCRAFT AUXILIARIES

SEAPLANE CARRIER

GIUSEPPE MIRAGLIA (ex-*Citta di Messina*, 1923). Former merchantman, acquired soon after completion and converted to seaplane carriage, 1924-7. Standard Displacement: 4,880 tons. 337' x 49' x 17'. Geared turbines, 12,000 HP. Speed: 21 kts. Plane capacity: 4 large and 16 small seaplanes, with two catapults for launching and mat for taking up planes from water. Armament: 4 4" AA, 4 MG. The *Giuseppe Miraglia*, one of the world's first seaplane carriers, does not seem to have played any active part in the war.

AUXILIARY AIRCRAFT CARRIER

At the time of Italy's surrender, the former luxury liner *Rex* (1932), 51,062 tons gross, was at Trieste in process of reconstruction as an auxiliary aircraft carrier along the lines of the large ex-passenger liners employed by Japan. The *Rex* was seized by the Germans. It is doubtful that the conversion will ever be completed.

Germany has taken over for her own use many vessels of the countries overrun by the Wehrmacht. Confirmable details, however, are hard to obtain. Published statements naming a long list of Danish warcraft thus requisitioned, for example, are contradicted by the fact that several of those named were among the ships scuttled by Danish crews in Copenhagen harbor in 1943. Among the few ships whose requisitioning is fairly certain are three Norwegian torpedo boats of the *Sleipner* class. Until more definite information is obtained, however, they, along with other reputedly requisitioned vessels, are listed under their rightful flags.

GERMANY - BATTLESHIPS

1 Tirpitz Class

Photo Page 177

| Name | Builder | Laid Down | Launched | Comp. |
|---------|---------------|-----------|----------|-------|
| TIRPITZ | Wilhelmshaven | 1936 | 4/1/29 | 1941 |

Standard Displacement: claimed as 35,000 tons, probably more. Dimensions: 791' w.l. x 118' x 26'.

Propulsion: Two screws, two sets high pressure, high temperature geared turbines. Speed: 30 kts.

Armament: 8 15" in twin turrets; 12 5.9" DP in twin turrets; 16 4.1" AA. Armor not reported. Planes: 4. Catapults: 2.

Since the destruction of the *Bismarck*, Germany's only full-size capital ship is the *Tirpitz*, named for the admiral who built up the Imperial German Navy before the last war. Two additional sisters, officially identified as hulls H and I, and probably intended to be named the *Deutschland*, *Friedrich der Grosse* or *Hindenburg*, were begun in 1937 and 1938 respectively, but their construction was sidetracked in favor of U-boats after 1940. Since the Reich has about lost the war and they will never be completed, they are not included. The *Tirpitz* itself has seen little action, carrying out one raid against a Murmansk-bound convoy (a Russian submarine scored a torpedo hit on her at that time) and in September, 1943, attacking Spitzbergen, where a small party of Norwegians was stationed. Most of the time she has skulked in Trondheim fjord and in the fall of 1943, Alten fjord, on the Norwegian coast. The Spitzbergen raid's purpose was probably to improve the morale of her long inactive crew. Shortly after the Spitzbergen attack, British two-man midget submarines penetrated Alten fjord and inflicted immobilizing damage on her.

1 Gneisenau Class

Photo Page 176

| Name | Builder | Laid Down | Launched | Comp. |
|-----------|----------------|-----------|----------|---------|
| GNEISENAU | Deutsche Werke | 1934 | 12/ 8/36 | 5/21/38 |

Standard Displacement: 26,000 tons. Dimensions: 741' 6" w.l. x 98' 6" x 24' 8".

Propulsion: Three screws, three sets high pressure, high temperature geared turbines. Speed: 29 kts.

Armament: 9 11" in triple turrets; 12 5.9" DP, 8 in twin turrets, balance in single gunhouses; 14 4.1" AA; numerous additional AA. Armor: 12"-13" belt; 12" turret faces; decks totaling 6". Planes: 4. Catapults: 2.

Gneisenau, surviving member of Nazi Germany's first pair of capital ships, is not a battleship at all, but a battle cruiser along the lines of the French *Dunkerque* and *Strasbourg*. She was, in fact, built as a reply to them. *Gneisenau* was last reported at Gdynia, partly dismantled, possibly in preparation for repair to damage sustained in repeated RAF attacks. Sister *Scharnhorst* was sunk the day after Christmas, 1943 off Norway's North Cape by British Home Fleet units escorting a convoy to Murmansk. Before her demise, she, *Gneisenau* and the Cruiser *Prinz Eugen* made a sensational dash through the Channel from Brest to German ports (February, 1942) and, during the Norwegian campaign in 1940, sank the British aircraft carrier *Glorious*.

GERMANY - ARMORED SHIPS

2 Lützow Class

Photo Page 177

| Name | Builder | Laid Down | Launched | Comp. |
|-------------------------|----------------|-----------|----------|----------|
| LÜTZOW (ex-Deutschland) | Deutsche Werke | 2/ 5/29 | 5/19/31 | 1/ 4/33 |
| ADMIRAL SCHEER | Wilhelmshaven | 6/25/31 | 4/ 1/33 | 11/12/34 |

Standard Displacement: 10,000 tons. Dimensions: 609' 3" x 67' 6" (*Deutschland*), 69' 6" (*Adm. Scheer*) x 21' 8".

Propulsion: Two screws, 8 M.A.N. Diesels, 54,000 SHP. Speed: 26 kts.

Armament: 6 11" in triple turrets; 8 5.9" DP in single gunhouses; 6 4.1" AA; numerous additional AA. 8 21" TT in quadruple mounts. Armor: 4" belt; 5.5" turret faces; 1.5"-2.25"-3" decks. Planes: 2. Catapults: 1.

These are the most powerfully gunned vessels ever built or likely to be built on what are reputed to be 10,000-ton hulls (12,000 tons is probably the real displacement). The Nazi "pocket battleships," as the French press dubbed them as soon as they appeared, however, are far from a successful type. They were built to fit a special set of circumstances; the fact that the Reich was allowed no vessels greater than 10,000 tons under the Versailles Treaty. Germany intended them to be fast enough to outrun anything they could not outgun, and to outgun anything they could not outrun. Armor was sacrificed to speed and armament. As the fate of the *Graf Spee*, a sister ship, showed, the choice was poor. Her armor was insufficient against even six-inch projectiles. Moreover, the Diesels used in place of turbines to save weight vibrate badly at top speed, interfering with accurate gunfire. And finally, the grouping of the main armament in two turrets—also to save weight—proved unwise. Such a ship is unable to cope with more than two skillfully handled attackers approaching from different directions. The *Lützow* was renamed the *Deutschland* to make the latter name available for a still uncompleted aircraft carrier. The *Lützow*'s principal activities to date have been confined to a single commerce raiding cruise, on which she sank the British auxiliary cruiser *Rawalpindi*, but otherwise scored insignificant results. The *Scheer* likewise has been out only once. Right now, both are rotting in German ports.

GERMANY - CRUISERS

3 or 4 Admiral Hipper Class

Photo Page 178

| Name | Builder | Keel Laid | Launched | Comp. |
|----------------|----------------|-----------|----------|---------|
| ADMIRAL HIPPER | Blohm & Voss | 1935 | 2/ 6/37 | 4/29/39 |
| PRINZ EUGEN | Germania, Kiel | 1936 | 8/22/38 | 1940 |
| SEYDLITZ | Germania, Kiel | 1936 | 1/19/39 | 1941 |
| ex-LÜTZOW | Deschimag | 1936 | 7/ 1/39 | |

Standard Displacement: 10,000 tons. Dimensions: 639' 9" x 69' 9" x 15' 6" (*Hipper*), 654' 6" x 71' x 15'.

Propulsion: Four screws, four sets high-pressure, high-temperature geared turbines, 80,000 SHP. Diesels for cruising. Speed: 32 kts.

Armament: 8 8" in twin turrets; 12 4.1" AA; numerous other smaller AA. 12 21" TT in triple mounts. Armor: 5" belt; 2" bridge and rangefinder. Planes: 4. Catapults: 1.

Like most heavy vessels of the German Navy, the Admiral Hippers, the Reich's only heavy cruisers, have seen comparatively little service outside the Norwegian campaign in 1940. The *Prinz Eugen* was with the *Bismarck* on the latter's ill-fated maiden voyage, escaping to Brest, where she shared RAF bombs with the *Scharnhorst* and *Gneisenau*, and shared the escape run up the English Channel. She was last reported in a Norwegian fjord. A vessel of the *Hipper* class, possibly the *Hipper* herself, in November, 1940 encountered a convoy of 38 ships in mid-Atlantic protected only by a single auxiliary cruiser (armed merchant cruiser),

the *Jervis Bay*. The *Jervis Bay* sold herself so dearly that the bulk of the convoy was able to escape the fleet, heavily-armed Nazi. Fairly reliable reports state that the ex-*Lützow* was sold to the USSR in 1940 before completion. She is said to have been named *Petropovlovsk*.

4 M Class

In 1938, Germany laid down the first two of four light cruisers, and in 1939, the last two, of 8,000 (possibly 7,300) tons standard displacement. So far they are designated only *M*, *N*, *O* and *P*. (Their builders are said to be Deutsche Werke or Germania; Wilhelmshaven; Blohm & Voss; and Deschimag, in that order). They are not believed to have reached launching. Armament is or was to be 12 5.9", 4 4.1" AA, 8 37 mm AA, 6 smaller AA and 8 21" TT in quadruple mounts. They were to have carried two planes and a catapult. Dimensions reported as 584' x 62' x 15' 9", propulsion machinery as four screws, four sets of geared turbines, 80,000 SHP. Speed was to be 32 kts. Diesels were to be provided for cruising. It is doubtful that they will be completed.

1 Nürnberg Class

Photo Page 179

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|----------------------|-----------|----------|-------|
| NÜRNBERG | Deutsche Werke, Kiel | 1934 | 12/ 8/34 | 1935 |

Standard Displacement: 6,000 tons.

Dimensions: 603' x 54' x 14' 3".

Propulsion: Three screws, three sets geared turbines, 80,000 SHP. Diesels for cruising. Speed: 32 kts.

Armament: 9 5.9"/50 in triple turrets; 8 or 10 3.5" AA; numerous smaller AA. 12 21" TT in triple mounts. Armor: 3"-4" side; 2" gunhouses. Planes: 2. Catapults: 1.

The *Nürnberg*, like other German light cruisers, except the *Emden*, but including the late *Köln*, *Karlsruhe* and *Königsberg*, has the unusual feature of disposing most of its main battery aft: two of the triple turrets are aft, probably on the theory that one of a light cruiser's functions is retreat to draw enemy vessels toward the main fleet. Note the shallowness of draft of German vessels; this is dictated by the shallowness of the Baltic.

1 Leipzig Class

Photo Page 179

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|---------------|-----------|----------|-------|
| LEIPZIG | Wilhelmshaven | 4/18/28 | 10/18/29 | 1931 |

Standard Displacement: 6,000 tons.

Dimensions: 580' x 53' 6" x 15' 9".

Propulsion: Three screws, two sets geared turbines, 60,000 SHP, one set Diesels on center screw, used for cruising, 12,000 SHP, can be run simultaneously with turbines for full speed. Speed: 32 kts.

Armament: 9 5.9"/50 in triple turrets; 10 3.5" AA; numerous smaller AA. 12 21" TT in triple mounts. Armor: 3"-4" sides; 2" gunhouses. Planes: 2. Catapults: 1.

The *Leipzig*, one of the vessels in which German engineers worked out a number of extremely interesting engineering plans, is equipped with variable pitch propellers on its turbine-driven shafts; these propellers may be feathered to eliminate drag when not in use, during cruising. The *Leipzig* was damaged by the British submarine *Salmon*, which invaded her anchorage at Cuxhaven, in December, 1939.

1 Emden Class

Photo Page 179

| Name | Builder | Keel Laid | Launched | Comp. |
|-------|---------------|-----------|----------|-------|
| EMDEN | Wilhelmshaven | 12/21 | 1/7/25 | 1925 |

Standard Displacement: 5,400 tons.

Dimensions: 508' 6" x 47' x 17' 6".

Propulsion: Two screws, two sets geared turbines, 46,500 SHP. Speed: 29 kts.

Armament: 8 5.9"/45 in single gunhouses; 3 3.5" AA (subsequently increased); numerous smaller AA. 4 19.7" TT in twin mounts. Armor: 3"-4" sides; 2" gunhouses. Planes: 0. Catapults: 0.

The *Emden* is the Reich's oldest post-War-I warship, and in recent years has been used mainly as a training craft.

GERMANY - DESTROYERS

13 Z 27 to Z 39 Class

These 13 vessels were laid down in 1939-40 under the 1938 German Navy program and have probably been completed. Several may since have been sunk. They are reported to displace 1,811 tons and to resemble the *Karl Galster*. No other details available.

4 Z 23 to Z 26 Class

The Z 23-26 are four destroyer leaders of 1,870 tons standard displacement laid down in 1939 and probably since completed. Some or all may have been sunk. They resemble the *Karl Galster* in main details. Dimensions: 385' 6" x 36' 6" x 9' 6". Z-23-40 constitute the so-called Narvik flotilla.

1 Karl Galster Class

KARL GALSTER (1938). Standard Displacement: 1,811 tons. Dimensions: 384' x 38' x 9' 6". Propulsion: Geared turbines, two screws, 55,000 SHP. Speed: 36 kts. Armament: 5 5"; 4 37 mm AA; 4 20 mm AA (AA battery possibly increased); 8 21" TT in quadruple mounts; DCTs.

The *Karl Galster* is the sole survivor of a class of six, the other five having been sunk by British gunfire at Narvik. Note the *Galster's* shallow draft; this is characteristic of all German, Swedish and Russian destroyers, and stems from the shallowness of the Baltic.

8 Beitzén Class

RICHARD BEITZEN (1935); PAUL JACOBI (1936); THEODOR RIEDEL (1936); HERMANN SCHÖMANN (1936); HANS LODY (1936); FRIEDRICH IHN (1935); ERICH STEINBRINCK (1936); FRIEDRICH ECKOLDT (1937). Standard Displacement: 1,625 tons. Dimensions: 374' x 37' x 9' 4". Propulsion: Geared turbines, two screws, 50,000 SHP. Speed: 36 kts. Armament: 5 5"; 4 37 mm AA; 4 20 mm AA (possibly increased AA battery today); 8 21" TT in quadruple mounts; DCTs.

Once there were 16 Beitzén, but eight are known to have been sunk. Some listed here may have been, too.

GERMANY - TORPEDO BOATS

T-1 to T-30 Class

T-1-T-18 (1938-39), T-19-T-30 (1940). Standard Displacement: 600 tons. Dimensions: 267' x 28' 3" x 6' 3". Propulsive machinery unreported. Speed: 36 kts. Armament: 1 or 2 4.1" DP; 2 37 mm AA; 6 21" TT in triple mounts.

Several of these vessels have undoubtedly been lost.

4 or less Wolf Class

Photo Page 180

ILTIS, WOLF (both 1927); JAGUAR, TIGER (both 1928). Standard Displacement: 800 tons. Dimensions: 304' x 28' x 9'. Propulsion: Geared turbines, 25,000 SHP. Speed: 34 kts. Armament: 3 4.1"/50 DP; 2 1-pounder AA; 6 21" TT in triple mounts.

The Wolf class resembles the Möwe class, the most noticeable difference being a square instead of a pointed stern. *Leopard* and *Luchs* of Wolf type were sunk by Russian forces in the Gulf of Riga or Gulf of Finland in 1941. Others too may have been sunk.

3 or less Möwe Class

FALKE, KONDOR, MÖWE (all 1926). Standard Displacement: 800 tons. Dimensions: 277' 9" x 27' 6" x 9' 3". Propulsion: Geared turbines, 24,000 SHP. Speed: 33 kts. Armament: 3 4.1"/50 DP; 2 1-pounder AA; 6 21" TT in triple mounts.

Seeadler and *Greif* of Möwe class were sunk by Russian forces in the summer of 1941 on the Gulf of Riga or Gulf of Finland. *Albatross*, another Möwe, was lost in the invasion of Norway. Others may also be war losses.

IN WAR OR IN PEACE



AT SEA OR



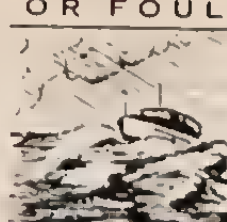
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GERMANY - ANTI-SUBMARINE

Germany has built or converted into escort craft a great many more vessels than are listed below, many of which have probably been sunk. Known German losses of escort vessels and sloops through 1943 are over 25, of which, however, only the sloop *Bremse* and escort vessel *Königin Luise* have been specifically identified.

1 Sloop

BRUMMER (1935). Built by Deschimag, Bremen. Standard Displacement: 2,410 tons. Dimensions: 354' 4" x 44' 4" x 11' 6". Propulsion: Geared turbines, 7,500 SHP. Speed: 20 kts. (can probably exceed this reported figure). Armament (last reported; has been changed several times in past years): 6 3.5" AA (four of new model, two of older); 4 3-pounder AA; possibly several smaller AA; fitted for minelaying and probably now equipped with DCTs.

The *Brummer* was built as a gunnery training vessel but has doubtless been used for combat duties since 1939. *Bremse*, sunk in 1941 off Murmansk, was a much smaller sloop. A third sloop-type gunnery training vessel was reported under construction in 1939.

8 F-1 Class

F-1, F-2, F-4, F-5, F-7-10 (all 1935). Standard Displacement: 600 tons. Dimensions: 249' x 28' 9" x 8' 3". Propulsion: Geared turbines, 9,000 SHP. Speed: 28 kts. Armament: 2 4.1"/50 DP; 4 37 mm AA; 2 1-pounder AA; DCTs.

Königin Luise, lost 1940, was of this class. *Hal* (ex-F-6) is now a fleet tender.

GERMANY - SUBMARINES

At the outbreak of the war, Germany had approximately 70 submarines in commission. Most of these have almost certainly been destroyed. However, since then the Reich has built hundreds more, concentrating upon U-boats to the exclusion of many other types of warcraft. Many yards besides those active in U-boat construction in 1939 have become submarine centers. In 1942 the building rate probably approached four a week. Identification numbers of captured or destroyed Nazi submarines, however, are no guide to the German production rate. Among vessels sunk in 1941 was *U-574*. Germany could not possibly have built 574 U-boats by that date. Moreover, through early 1942, no number between 131 and 432 had been identified; it is probable that few vessels with those numbers existed up to that time.

Since 1941 German yards have concentrated upon three principal types of submarine, a 517-tonner, one of 740 tons and one of 1,060 tons, the first two classes making up over 90 per cent of the construction program. To expedite production, the double hull employed in the usual medium or large submarine has been dropped in favor of a single hull and saddle tanks. The U-boat's vulnerability to depth charge attack is thereby increased. However, the single hull is exceptionally thick and the German U-boat incorporates a great many other unusual features as well, such as an automatic watertight hatch at the base of the conning tower. (Such details are described in the articles on Germany and the Battle of the Atlantic). German submarines customarily stow extra torpedoes on deck, cutting down their underwater speed, but adding greatly to the limited number of torpedoes a submarine can carry (normally one in each tube and one spare). Reports of giant German "milk cow" U-boats for refueling undersea raiders in the open sea are without substantiation, as are also reports that new U-boats employ a special Diesel engine able to run on hydrogen-oxygen fuel below the surface. There is ground for believing, however, that the Reich may be experimenting with the Woolton "charged Diesel" motor originally invented in the United States. The Woolton "charged Diesel" employs fuel oil in which enough oxygen is dissolved under pressure to assure the fuel's combustion, together with a small amount of oxygen over the surface of the oil.

The U. S. S. *Borje* rammed and sank in the fall of 1943 a U-boat whose surface displacement was estimated as at least 50 per cent greater than the standard German 1,060-ton type. Thus the Nazis may be building large "Atlantic cruisers" (not to be confused with the non-existent "milk cow" submarines).

The list below is approximate. Many named have been sent to the bottom.

Captured and Requisitioned Vessels

ex-H.M.S. *SEAL* (1938). Of Porpoise type, captured in 1940 and refitted for use by the German navy.

ex-BATIRAY (1939). Under construction at Kiel for Turkey when war broke out; taken over by German navy. Displacement: Surface, 1,044 tons; submerged, 1,357. Dimensions: 282' x 22' 4" x 14'. Propulsion: Diesels (3,500 HP) and electric motors (HP unreported). Speed: Surface, 20 kts.; submerged, 9. Armament: 6 21" TT (four bow, two stern); 1 4"; 1 20 mm AA (both guns on conning tower); fitted as minelayer, capacity, 40 mines. the *Batiroy* may be *U-77* or *78* listed below.

Two Germania type submarines were laid down at Kiel in 1939 to Yugoslav order. If completed, they were probably requisitioned. Particulars: 280 tons, surface displacement; 335, submerged; 148' 8" x 15' 9" x 12' 8"; Diesels, 830 HP; 13 kts., surface; 7, submerged; 4 21" TT, 1 15 mm AA.

1,060-ton Type

U-77, 78 (1939) and others (1940 or later). Displacement: Surface, 1,060 tons; submerged unreported. Dimensions: 275' 6" x 27' 9" x 12' 9". Propulsion: Diesels (3,600 HP) and electric motors (1,100 HP). Speed: Surface, 18.5 kts.; submerged, 8. Armament: 2 21" TT (bow), 1 4.1"/45; 2 1-pounder AA; fitted as minelayer, capacity unstated.

U-77 or *78* may actually be the ex-*Batiroy*. The Nazi 1,060-ton type of U-boat did not make a considerable appearance at sea until 1942, when the German undersea fleet laid siege to the U. S. Atlantic coast. A great many of the vessels which thus crossed the Atlantic were of this size. As in the case of other German U-boats, the latest vessels of the 1,060-ton type have much heavier AA armament than indicated above.

740-ton Type

U-37 (built by Deschimag, 1938); 65-68 (1939); 79-82, 88-92 (all 1940); probably 112-130, numbers around 501 and 556 and others (all 1940 or later). Displacement: Surface, 740 tons; submerged unreported. Dimensions: 244' 6" x 20' 6" x 13' 6". Propulsion: Diesels (3,200 HP) and electric motors (1,000 HP). Speed: Surface, 18.5 kts.; submerged, 8. Armament: 6 21" TT (four bow, two stern); 1 4.1"/45; 2 1-pounder AA (AA guns on conning tower).

Two later modifications of the 740-ton type have been reported. One, with slightly different dimensions, has only five tubes (four bow, one stern) and Diesel engines of somewhat reduced power (2,800 HP), giving a surface speed of only 17.5 kts. Another, again with somewhat different dimensions, has engines of sufficient power to give a surface speed of slightly over 20 kts. Some of 740-ton type may be minelayers; if so, torpedo armament is probably reduced to two bow tubes. All later 740-tonners have much increased AA armament. *U-37* is sole survivor of 1938 group of eight 740-tonners. (Others, all lost, were *U-38* to *44*). *U-64*, lost, belonged to second group of 740-tonners. *U-103* to *111*, all sunk, were one 1940 group of this same type. Other 740-tonners the Germans have lost include *U-131*, 501, 556 and 570. *U-570* was captured and is source of much of Allied information on U-boats. *U-25* and 26, both sunk, were a 712-ton class from which the 740-tonners are derived.

517-ton Type

U-45-55 (Germania, Kiel, all 1938); 69-72, 74-76, 83, 84, 86, 87 (all 1939); 93, 94, 96-98 (all 1940); probably 435-443 and others in same range, and numbers around 574 and still others (all 1940 or later). Displacement: Surface, 517 tons; submerged unreported. Dimensions: 213' 3" x 19' 8" x 13'. Propulsion: Diesels (2,100 HP) and electric motors (750 HP). Speed: Surface, 16.5 kts.; submerged, 8. Armament: 5 21" TT (four bow, one stern), 1 3.5", 1 1-pounder AA.

Later editions of the 517-ton type have Diesel engines of considerably greater power, giving a surface speed approaching 20 kts. *U-73* of first 1939 group was captured by the Red Navy in the Barents Sea; *U-85* of second 1939 class is known to have been destroyed, as also *U-95*, 99 and 100 of first 1940 group. Other identified 517-tonners which have been lost are *U-432-434*, 444 and 574. 517-tonners are used mainly around England and in the North and Baltic Seas.

3 or less 500-ton Type

U-29, 30, 34 (all 1936). Displacement: Surface, 500 tons; submerged unreported. Dimensions: 206' 9" x 19' 6" x 13'. Propulsion: Diesels (2,000 HP) and electric motors (750 HP). Speed: Surface, 16.5 kts.; submerged, 8. Armament: 5 21" TT (four bow, one stern), 1 3.5", 1 1-pounder AA.

U-29 (built by Germania), *U-30* and *34* (both built by Deschimag) are the sole survivors (and some or all of them may have been sent to the bottom) of a 500-ton class which was the progenitor of the present 517-ton type. Others in class were *U-27*, 28, 31-33, 35 and 36, all resting permanently on ocean floor.

25 or less 250-ton Type

Photo Page 181

U-1-6 (built by Deutsche Werke, 1935); 7-11, 17 (all Germania, 1935); 20 (Germania, 1936); 21-24 (Deschimag, 1936); 56, 57 (Deutsche Werke, 1938); 58-63 (Deutsche Werke, 1939). Displacement: Surface, 250 tons; submerged, 330. Dimensions: 136' 6" x 13' x 12' 8". Propulsion: Diesels (700 HP) and electric motors (360 HP). Speed: Surface, 13 kts.; submerged, 7. Armament: 3 21" TT, 1 1-pounder AA.

U-1 to 11 were the first undersea craft Hitler built in defiance of the Versailles Treaty. England shortsightedly signed an appeasement naval treaty with Hitler in 1936 putting the stamp of London approval on Germany's intention of building at least to parity with England in U-boats. The 250-ton type, of course, is no longer built and is now mainly used for training. Some have seen combat action, however, as evidenced by appearance of seven 250-tonners (U-12-16, 18, 19) among identified U-boat dead.

GERMANY - AUXILIARIES AND SPECIAL TYPES

COAST DEFENSE SHIPS

2 Schlesien Class

Photo Page 180

SCHLESSEN (Schichau, Danzig, 5/28/06), SCHLESWIG-HOLSTEIN (Germania, Kiel, 12/17/06). Standard Displacement: 13,040 tons. Dimensions: 419' x 73' x 25' 3". Propulsion: Three screws, three sets reciprocating engines, 17,000 HP. Burn both oil and coal. Speed: 18 kts. Armament (before war, possibly changed since): 4 11"/40 in twin turrets; 10 5.9"/45; 4 3.9" AA; several MG. Armor: 4"-9.5" belt, 1.5"-3" deck, 10" turrets, 6", 12" conning towers.

The pre-dreadnoughts *Schlesien* and *Schleswig-Holstein* are the only two capital ships Germany was allowed to retain after the last war. Partly re-armed in 1926-8, they were used for many years as training vessels. They are, however, quite powerful coast defense vessels and, although still not rated as such, took a prominent part in operations at Danzig and Gdynia in September, 1939.

MOTOR TORPEDO AND GUN BOATS

S-38 Type

Photo Page 180

S-38-57 (1939-40) and many others since. Wood or composite construction. Displacement: 86 tons. Length: 105'. High speed Diesels or gasoline engines. Speed: 35 kts. Armament: 2 47 mm AA and torpedoes.

These are Germany's famed E-boats (the derivation of the name, popular in England and America, is a mystery), which the Nazis rate simply as *Schnellboote* or "speedboats." Armament appears to vary with mission, some including depth charges as British motor gun boats; others are typical MT8s. The S-38s generally resemble the earlier S-6 type. Both have a U-form hull of exceptional seaworthiness. Many of the S-38 group have doubtless been sunk.

32 or Less S-6 Type

S-6-37 (Lürssen, Vegesack, 1933-9). Wood or composite construction. Displacement: 62 tons. Length: 93'. High speed Diesels or gasoline engines, 2,400 HP. Speed: 30 kts. Armament: 2 1-pounder AA; 1 20 mm AA; 2 19.7" TT.

These are the original type of Nazi *Schnellboote* or E-boat. Many, if not most, of the S-6-37 group have undoubtedly been lost.

FLAK SHIPS

During the course of the war, the Nazis have armed hundreds of small vessels, of German and occupied-territory origin, as anti-aircraft ships, both for escort and off-port station duties. Among such units are reported to be the 3,858-ton Norwegian *Harald Haarlagre* and *Tordenskjold*, requisitioned and extensively altered.

MINELAYERS

MT-1 (ex-Heppens), MT-2 (ex-Marienstein) (both 1917). Displacement: 550 tons. Dimensions: 164' x 30' 6" x 7' 6". Two screws, reciprocating engines, 375 HP. Coal-burners. 10 kts. The German designation for minelayers is *Sperrfahrzeuge*.

A, 8 (both 1939); C, D (both 1940). No particulars reported.

C-21-24 (1935-7). Displacement: 120 tons. 9 kts. No other details available.

C-3, 5, 9, 14, 16. Small old steamers (about 75 tons displacement) employed as coastal minelayers.

Many of the above vessels may have been sunk.

MINESWEEPERS

M-1 Type

M-1-4, 6-36 (1937-40) and probably others. Displacement: 600 tons. Dimensions unstated. Coal-fired reciprocating engines. Speed: 17 kts. Armament: 2 4.1", 2 37 mm AA.

The Nazi war loss list includes three minesweepers of much higher number than any of those listed above, M-61, 85 and 89. These are probably of the M-1 general type, which must number several score of vessels altogether. M-5, as well as others of the original M-1-36 group, has been lost. The M-1-36 group was built by four yards—Lübecker Flodenwerke, Lübeck; Schichau, Elbing; Stettiner Oderwerke, Stettin; and Stücken Sohn, Hamburg. The Nazi navy rates large minesweepers such as these *Minensuchboote* ("mine search boats").

R-18 Motor Type

R-18-40 (Travemünde and Weser Yards, 1933-39) and possibly many others. Displacement: 90 tons. Dimensions unreported. Diesels, 1,800 HP. Equipped with Voith-Schneider variable pitch propellers (two each). Speed: 18 kts. Armament: 2 1-pounder AA.

So far as known, Germany's R-18 type motor minesweepers (which the Nazis class as *Räumboote*, patrol boats) are the only large group of vessels equipped with variable pitch marine propellers, which are still in the infancy of their development and which are intended to function just as the variable pitch airplane propeller, i.e., permit selection of the most efficient pitch for any speed. R-17 and four others of R-18 type known to have been lost; others have probably also been sunk.

R-1 Motor Type

R-1-16 (Lürssen, Vegesack, and other Weser River yards, 1930-34). Displacement: 45 tons. Length: 85'. Two screws, two sets Diesels, 600 HP. (R-1 is equipped with Voith-Schneider variable pitch propellers, made standard in the R-18 and later motor minesweepers). Armament: 1 1-pounder AA.

Several of the above have been sunk, although not identified.

M-72 Type

M-72, 75, 84, 98, 102, 104, 110, 111, 117, 122, 126, 145, 157, TAKU (ex-M-146) (all 1916-20). Displacement: 525 tons. Dimensions: 192' x 24' 3" x 7' 3". Two screws, reciprocating engines, 1,850 HP. Coal-burners. Speed: 16 kts. Armament: 1 4.1", 1 MG.

These are the remainder of Germany's World War minesweeping fleet. Besides M-132, several of the above World War *Minensuchboote* are certain war casualties. Others, not listed here, were used for various special purposes before the war, and may now be back in harness as minesweepers. M-72 herself and other low number World War minesweepers may have been renamed and numbered to vacate low numbers for vessels of the M-1 type.

TRAWLERS

The German Navy has taken over a great many trawlers and other fishing vessels, from occupied countries as well as the German fishing fleet, for use on minesweeping, patrol and other duties. The only names announced, however, some of which may have been lost, are the following:

BEOWULF (ex-Johann Vester, ex-Beowulf), FREYR (ex-Glücksburg), FRITHJOF (ex-Ebeling, ex-Frithjof), HAGEN (ex-Anton Palm, ex-Gustav Harms), HELMDALL (ex-Lauenburg), HILDEBRAND (ex-Seelowe, ex-Wilhelm Grünhage), HUGIN (ex-Gorch Fock, ex-Hugin), MUNIN (ex-Ditmar Koel, ex-Munin), ODIN (ex-Osterreich), SIGFRID (ex-Esteburg, ex-Sigfrid), VOLKER (ex-Niedersachsen), WOTAN (ex-Augustenburg) (all 1912-21). Displacements vary from 500 to 600 tons, dimensions from 117' x 22' x 11' to 136' x 24' x 11' 6". Reciprocating engines, 400 HP. Armament: 1 3.5", 3 1-pounder AA. Acquired 1937. Though specifications vary, ships resemble each other quite closely in appearance.

TARGET AND TARGET SERVICE SHIPS

HESSEN (1903). Ex-battleship, disarmed and rebuilt as a radio-controlled target ship in 1936-7. Displacement: 13,040 tons. Dimensions: 400' 3" x 73' x 23' 6". Automatically fired oil-burning boilers, reciprocating engines, 16,000 HP. Speed: 20 kts. Equipment includes radio-controlled smokelayers.

ZÄHRINGEN (1901). Ex-battleship, disarmed and reconstructed 1927-8 as a radio-controlled target. Displacement: 11,800 tons. Dimensions: 393' 6" x 68' 3" x 25'. Two screws, automatically fired oil-burning boilers, 5,000 HP. Speed: 13 kts.

KOMET (ex-T-151, 1907), 8LITZ (ex-T-185, 1910). Former torpedo boats, now classed as *Fernlenkboote* ("distant link boats") and employed to control radio-controlled target vessels. Displacement: 675 and 800 tons respectively.

PFEIL (ex-T-139, 1906). Former torpedo boat, classed as *Schnellschlepper* ("fast tug") and used for towing targets. Displacement: 600 tons.

LUDWIG PREUSSER (1938). Tug employed for target towing and control of radio-controlled ships.

TENDERS

Two tenders, one for torpedo boats and one for U-boats, were reported under construction at the outbreak of the war.

WALDEMAR KOPHAMEL (Deutsche Werke, Kiel, 5/26/39). Submarine tender. No details available.

KARL PETERS (Neptun, Rostock, 2/39). MT8 tender. Displacement: 3,500 tons. Former cargo vessel. No other details reported.

WILHELM BAUER (Howaldtwerke, Kiel, 12/20/38). Submarine tender. No data released.

ERWIN WASSNER (ex-Gran Canaria, Hamburg, 1938). Submarine tender. Displacement: 5,000 tons. 379' 9" x 54' 9" (draft unreported). Single screw, geared turbines, 5,000 HP. (A sister, Santa Cruz, may also have been taken over for use as a submarine tender).

TANGA (Neptun, Rostock, 1938). MT8 tender. No details available.

MEMEL (1937). Submarine tender. Displacement: 998 tons. 13 kts.

TSINGTAU (Blohm & Voss, 6/6/34). MT8 tender. Standard Displacement: 1,970 tons. 278' 9" x 44' 3" x 12' 8". Two screws, Diesels, 4,100 HP. 17.5 kts. Armament: 2 3.5" AA, 4 MG.

SAAR (Deutsche Werke, Kiel, 4/5/34). U-boat tender. Standard Displacement: 2,710 tons. 308' x 44' 3" x 14'. Two screws, Diesels, 3,700 HP. 16 kts. Armament: 3 4.1" AA, 4 MG.

ISAR (ex-Puma), LECH (ex-Panther) (both Bremer Vulkan, Vegesack, 1930). Submarine tenders, former merchantmen purchased 1938. Displacement: 3,850 tons. 319' x 45' 6" x 13'. Reciprocating engines, 2,000 HP. 12 kts.

WEICHSEL (ex-Syra, Howaldt, Keil, 1923). Submarine tender, ex-merchantman, acquired by German navy in 1936. Displacement: 3,974 tons. 309' 3" x 44' x 13' 6". Coal-burning reciprocating engines, 1,400 HP. 10.5 kts. Armament: 4 20 mm AA.

DONAU (ex-Nicea, Lübeck, 1922). Former merchantman, submarine tender. Displacement: 3,886 tons. 287' 6" x 41' 6" x 14'. Coal-burning reciprocating engines, 1,150 HP. 10 kts. Armament: 4 20 mm AA.

MOSEL (ex-Frieda, Hamburg, 1921). Submarine tender. Displacement: 796 tons. 9 kts. Armament: 2 20 mm AA.

ARKONA (ex-M-115, 1918), STÖRTEBEKER (ex-M-66, 1918), NAUTILUS (ex-M-81, 1919), OTTO BRAUN (ex-M-129, 1919), RAULE (ex-Wacht, ex-M-133, 1919). Tender to motor minesweepers, former minesweepers themselves. Displacement: 525 tons. 192' x 24' 3" x 7' 3". Two screws, coal-burning reciprocating engines, 1,850 HP. 16 kts. Armament: 1 4.1", 1 MG. These vessels were rated as *Versuchboote*, experimental vessels, for many years.

BROMMY (ex-M-50, 1916). Tender to motor minesweepers, a former minesweeper herself. Displacement: 480 tons. 180' 6" w.l. x 24' x 7' 6". Two screws, coal-burning reciprocating engines, 1,800 HP. 16.5 kts. Armament: 1 4.1", 2 1-pounder AA.

WARNOW (ex-Vorwärts, 1906). Submarine tender. 726 tons gross. 206' x 41' 3" (draft unstated). 600 HP. 13 kts.

EXPERIMENTAL VESSELS

The Arkona group of minesweeper tenders were rated as experimental vessels for many years. In addition to them, the German Navy had three vessels rated as experimental craft prior to the war, as follows:

PELIKAN (ex-M-28, 1916). Ex-minesweeper. Displacement: 500 tons. 180' 6" w.l. x 24' x 7' 6". Coal-burning reciprocating engines, two screws, 1,800 HP. 16.5 kts. Armament: 1 4.1", 1 1-pounder AA.

CLAUS VAN SEVERN (ex-T-190, ex-V-190, 1911). Ex-torpedo boat. Displacement: 800 tons. 241' 6" x 26' x 10' 6". Geared turbines. 25 kts. Armament: 2 4.1"/45, 2 MG AA, 2 single 19.7" TT on center line.

STRAHL (ex-Latona, ex-Soneck, 1902). Ex-merchantman. Displacement: 1,643 tons. 235' x 33' 6" x 11' 4". Reciprocating engines, 800 HP. 10 kts. Acquired by German navy, 1936.

UTILITY CRAFT

HELA (1939). *Flottentender* or fleet utility craft. No details available.

MARS (ex-Samoa, ex-Altair, 1937). Gunnery school utility. 2,414 tons gross. 324' 3" x 46' 9" (draft unstated). 11 kts.

DAHME (ex-Carsten Rehder, 1936). Submarine school utility craft, former trawler. 475 tons gross. 186' x 26' 3" x 13'. Reciprocating engines.

PAUL ENEKE (ex-Admiral, Memel, 1936). Navigation school utility craft, acquired in 1937. Displacement: 460 tons. 165' x 25' x 10' 6". Single screw, Diesel engine, 800 HP. 12.5 kts.

HAI (ex-F-6, 1935). Former escort vessel of F-1 type, now rated a *Flottentender* or fleet utility craft. Specifications as F-1 class.

TAUCHER (Stücken & Sohn, Hamburg, 1934). *Taucherfahrzeug* or diving school utility craft. Displacement: 195 tons. 88' 6" x 22' 4" x 6' 3". Diesel engine, 60 HP. 6.5 kts.

FUCHS (ex-M-130, 1919). Former minesweeper, employed as gunnery school utility. Displacement: 525 tons. 192' x 24' x 7' 3". Coal-burning reciprocating engines, two screws, 1,850 HP. 16 kts. Armament: 2 4.1" or 3 3.5" AA (armament changed from time to time).

NETTLEBECK (ex-Zieten, ex-M-138, 1919). Ex-minesweeper. Displacement: 550 tons. 192' x 24' x 7' 6". Two sets Diesel engines, 840 HP. 12 kts. Armament: 1 4.1", 2 1-pounder AA.

HECHT (ex-M-60, 1917), JAGD (ex-M-82, 1917), ACHERON (ex-M-113, 1918), DELPHIN (ex-M-108, 1919), FRAUENLOB (ex-M-134, 1919), GAZELLE (ex-Hela, ex-M-135, 1919). Former minesweepers of 525 ton type, identical with M-72 type in main specifications. Acheron employed as a submarine utility; Frauenlob, station utility; Delphin, gunnery school utility; and others as fleet utilities.

ORKAN (ex-Welle, ex-Grille, ex-Star of Eve, ex-Von der Goltz, 1916). Acquired 1937 for use as practice torpedo retriever. Sunk in storm, 1937, but raised and refitted. Displacement: 470 tons. 120' x 24' x 12' 6". Coal-burner, 400 HP. 10 kts.

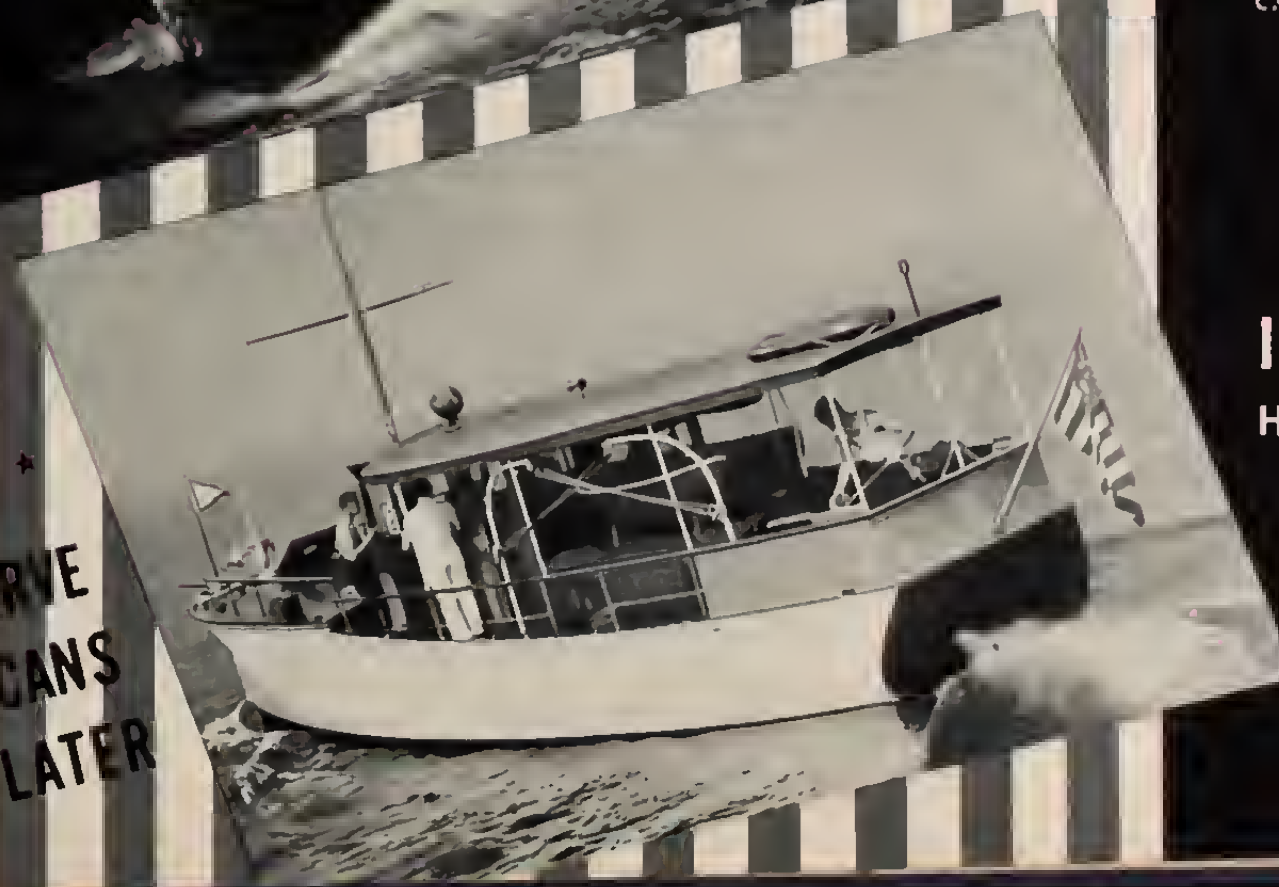
NORDSEE (1914). Navigation school utility. Displacement: 830 tons. 175' 9" x 30' 9" x 12'. Two screws, coal-fired reciprocating engines, 1,680 HP. 12 kts.

T-123 (ex-S-23, Schichau, 1913). Ex-torpedo boat employed as submarine utility. Displacement: 640 tons. Dimensions: 233' x 24' 4" x 9' 9". Geared turbines. 22 kts. Armament: 2 MG.

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T-107 (ex-G-7, 1911), T-108 (ex-G-8, 1911), T-110 (ex-G-10, 1912), T-111 (ex-G-11, 1912). Ex-torpedo boats, employed for torpedo training. Displacement: 760 tons. 247' 9" x 25' x 10' 6". Geared turbines. 25 kts. Armament: 1 4.1"/45, 2 MG AA; 3 19.7" TT (T-108), 3 21" and 1 19.7" (others). These vessels were due to be scrapped but may have been retained after the outbreak of the war.

T-196 (ex-G-196, 1911). Ex-torpedo boat classed as *Flottentender* or fleet utility. Displacement: 800 tons. 242' 9" x 26' 3" x 10' 9". Geared turbines. 25 kts. Armament: 2 4.1"/45, 2 MG AA.

DRACHE (1908). Gunnery school utility. Displacement: 790 tons. 176' x 31' 9" x 10' 6". High pressure boilers, geared turbines. 18 kts. or over. Armament: 6 4.1", 1 20 mm AA. Extensively refitted and completely re-engined, 1936.

EDUARD JUNGSMANN (ex-T-153), T-155-158 (all 1907-8). Ex-torpedo boats, *Eduard Jungsmann* used as gunnery school utility and others as submarine utilities. Displacement: 675 tons. 237' x 25' 6" x 10' 6" max. Reciprocating engines. 22 kts. Armament (except *Jungsmann*, which is unarmed): 1 or 2 MG AA plus, in T-158, 1 3.5".

SPREE (ex-Vorwärts). Submarine school utility. No particulars available.

CARL ZEISS (ex-H.L.M. Russ). Gunnery school utility. No particulars available.

MISCELLANEOUS

ALBERICH (ex-*Remus*, Linz, 1938). Danube River patrol vessel. Displacement: 240 tons. 167' 8" x 25' x 3' 8". Two screws, Diesels, 560 HP. 12 kts. Triple rudder and Kort nozzle. Armament: 2 1-pounder AA. Classed as *Schlepper*, tug.

ALBERT LEO SCHLAGETER (Blohm & Voss, 1937). Sail training ship. Displacement: 1,634 tons. 295' 3" x 39' 4" x 15' 9". Auxiliary Diesels, 700 HP. 10 kts. Complement includes 200 midshipmen. Sister of *Horst Wessel*.

ALTMARK (1939). Oiler. About 10,000 tons gross. 19 kts. Armament: 8 5.9". The famous Nazi prison ship from which a British force led by the late destroyer *Cossack* rescued 400 British seamen in 1940; British had to leave ship behind when they evacuated Norway.

ASTA. Small sailing yacht used for coastal training.

BECHELAREN (ex-*President Masaryk*, 1930). Danube River patrol vessel, seized from Czechoslovakia. Displacement: 185 tons. 150' x 20' x 5'. Turbines, 1,600 SHP. 16.8 kts. Armament: 4 66 mm, 4 MG.

BIRAGO (ex-Hungarian *Siofok*, ex-Austro-Hungarian *Czuka*, Budapest, 1915). Danube River patrol vessel, retained by Hungary after separation of Austria and Hungary, purchased by Austria, 1929, seized by Germany, 1938. Displacement: 60 tons. 118' x 15' x 2' 8". Reciprocating engines, 800 HP. 11 kts. 1 70 mm/30, 1 1-pounder AA. Light armor belt.

BRÖSEN (Howaldt, Kiel, 1915). Oiler. Standard Displacement: 2,408 tons. 233' x 34' 6" x 16'. Reciprocating engines, 250 HP. 8 kts.

BRÜNHILD (1939). Danube River escort vessel. No particulars available.

DITTMARSCHEN (1938). Oiler. About 10,000 tons gross. 18-19 kts. Armament: 8 5.9".

ELBE (Wilhelmshaven, 1931). Fishery protection vessel. Displacement: 600 tons. 157' 6" x 27' 3" x 10' 3". Two screws, Diesels, 1,600 HP. 15 kts. Armament: 1 3.5", 1 MG. Sister of *Weser*.

ERMLAND (1938). Oiler. About 10,000 tons gross. 18-19 kts. Armament: 8 5.9".

FHR-1-6 (ex-Austrian craft, first five once named *Krems*, *Murr*, *Salzach*, *Enns*, *Drau*, respectively, all (1933-35). Auxiliary river minesweepers. 46' x 10' x 2' 6". Diesels, 200 HP. Armament: 2 MG.

FM-1 (ex-CMD-1), FM-2 (ex-OMd-2). 17 tons. 17 kts. Armament: 2 3", 2 MG.

FR-1-12 (1938). River minesweepers, on Danube. No details available.

FRANKEN (1939). Oiler. About 10,000 tons gross. 18-19 kts. Armament: 8 5.9".

GAZELLE. Auxiliary river minesweeper, on Danube. 30' x 7' 6" x 2'. Possibly renamed.

GORCH FOCK (Blohm & Voss, 1933). Sail training ship. Displacement: 1,354 tons. 241' 8" x 39' 4" x 15'. Auxiliary Diesels, 500 HP. 8 kts. Armament: 2 MG.

GRILLE (Blohm & Voss, 1934). Admiralty yacht. Standard Displacement: 2,560 tons. 377' 3" x 44' 3" x 11' 3". Geared turbines, 8,000 SHP. 20 kts. Armament: 3 4.1", 2 37 mm AA, 4 MG.

HOOGE (1938). Coastal surveying vessel. 90 tons.

HORST WESSEL (Blohm & Voss, 1936). Sail training vessel, identical with *Albert Leo Schlageter*. *Horst Wessel* is named for a Nazi pimp killed in a street brawl during Hitler's rise to power and converted into a Nazi martyr.

INSEL POEL. Oiler. No data available.

IRBEN. Mine transport. Probably similar to *Lauring*.

KRIEMHILD (1939). Danube River escort vessel. No information available.

LAURING. Mine transport. Standard Displacement: 1,253 tons. 9.5 kts.

METEOR (Danzig, 1915). Surveying vessel. Displacement: 1,200 tons. 219' 10" x 33' 6" x 12' 6". Originally reciprocating-engined, but converted to Diesels in 1934. 2,200 HP. 14.5 kts. Armament: 1 3.5", 1 1-pounder AA.

NIBELUNG (1939). Danube River motor launch.

NIXE (ex-*Fiora*, Harburg, 1914). Commander-in-Chief's yacht. 108 tons. 96' 9" x 16' 4" x 5' 6". Two screws, gasoline engines, 200 HP. 13 kts.

NORDERNEY. Oiler. Displacement: 1,110 tons. 7 kts.

NORDEROOG (ex-*Peilboot II*, 1911). Coastal surveying vessel. 80 tons. 132 HP. 8 kts.

NOTHUNG (1939). Danube River utility craft.

ORION (Travemünde, 1936). Small sailing yacht used for coastal training.

OTTER (Schichau, Elbing, 1934), RHEIN. Mine transports. Standard Displacement: 1,253 tons. 9.5 kts. Similar to *Lauring*.

SAMLAND (ex-*Hansa*, 1929). Oiler. Displacement: 10,111 tons. 413' x 52' 8" (draft unreported). 2,100 HP.

SCHULDUNG (1939). Danube River motor launch.

SÜDEROOG (ex-*Peilboot V*, 1912). Coastal surveying vessel. 80 tons. 132 HP. 8 kts.

SUNDEVALL (ex-*Johann Wittenberg*, ex-M-109, 1919). Ex-minesweeper now employed as surveying vessel. Identical in specifications, except possibly armament, with M-72 type of minesweeper.

UTA (1939). Danube River craft, rated as protective vessel (*Versorgungsschiff*).

UZ-18 (1929). Ex-MTB, now used on harbor duties. 26 tons. 70' x 13' 9" x 3' 3". Three screws, three sets benzol engines, 720 HP. 20 kts.

UZ-32, 33 (1919-20). Classed as picket boats. 60 tons. 101' 6" x 14' 4" x 4'. Two screws, two sets benzol engines, 500 HP. 14 kts.

WESER (Wilhelmshaven, 1931). Fishery protection vessel. Main specifications identical with fishery protection vessel *Else*, a sister ship.

WESTERWALD (1938). Oiler. About 10,000 tons gross. 18-19 kts. Armament: 8 5.9".

WOLLIN (1916). Oiler. Displacement: 3,429 tons. 246' x 36' (draft unstated). Reciprocating engines, 600 HP. 9.5 kts.

In addition to the Danube River vessels above, the Danube flotilla now includes a number of fast new motor boats, designated *Fluss Schnellboote*, and a number of craft, mostly small, taken over from such organizations as the police and the Hitler Youth shortly before the war.

GERMANY - AIRCRAFT CARRIERS

2 Graf Zeppelin Class

Photo Page 178

| Name | Builder | Keel Laid | Launched | Comp. |
|----------------|----------------|-----------|----------|---------|
| GRAF ZEPPELIN | Deutsche Werke | 1936 | 12/8/38 | 1939/40 |
| PETER STRASSER | Germania, Kiel | 1936 | 1/40 | |

Standard Displacement: 19,250 tons. Dimensions: 820' 3" x 88' 6" x 18' 4". Flight Deck, 790' in length.

Propulsion: Three or four screws, geared turbines. Speed: 32 kts.

Plane Capacity: 40-60. Armament: 16 4.9" DP, half in twin turrets fore and aft of island, balance in single casemates; 10 4.1" AA; numerous smaller. Armor: thin belt for most of length. Casemates for single 5.9" guns also armored. Turret armor unreported.

Although both are known to have been launched, it appears that only the *Graf Zeppelin* has been completed. At one time there were reports that the *Peter Strasser* would have heavier armament than the *Graf Zeppelin* and would be a hybrid large carrier-cruiser for purposes of commerce destroying. But these stories do not seem to have materialized. The *Graf Zeppelin* is at Kiel; it has never made a voyage out of protected German waters.

Much confusion in the English spelling and pronunciation of Japanese names arises from the fact that Japanese consonants and vowels in many cases have no precise equivalents in English and must be rendered by approximations. Shortly before the war, the Japanese government issued a revised list of English spellings, which NAVY YEAR BOOK generally follows. However, where older renditions, which are quite as accurate, are widely known, they are retained. The following list of sound equivalents may facilitate reference to Japanese vessels.

AE pronounced as separate syllables sometimes separated by Y, as *Sanae* and *Sanaye*.

D followed by u = DZ, (as *Idumo* and *Idzumo*), DS (as *Inaduma* and *Inadsuma*) and sometimes TS (as *Miduho* and *Mitsuho*).

G followed by i = J, as *Amagiri* and *Amajiri*.

H followed by o = B, as *Saseho* and *Sasebo*.

H followed by u = F, as *Huso* and *Fuso*.

IE to be pronounced as separate syllables are sometimes separated by Y, as *Hiei* and *Hiyei*.

OI to be pronounced as separate syllables are sometimes separated by H, as *Oi* and *Ohi*.

S followed by i = SH, as *Asasio* and *Asashio*.

SY followed by o = SH, as *Hosyo* and *Hosho*.

T followed by i = CH, as *Titibu* and *Chichibu*.

T followed by u = TS, as *Hatukaze* and *Hatsukaze*.

TY followed by o = CH, as *Tyokai* and *Chokai*.

Z followed by i = J, as *Zingei* and *Jingei*.

Z followed by u = DZ, as *Suzukaze* and *Sudzukase*.

ZY followed by o = J, as *Ryuzyo* and *Ryujo*.

JAPAN - BATTLESHIPS

5 Nissin Class

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|------------|-----------|----------|--------|
| NISSIN | Kure | 3/37 | 11/30/39 | 1941 |
| TAKAMATU | Yokosuka | 9/37 | 4/40 | 1941-2 |
| KII | Mitsubishi | 8/38 | 11/ 5/40 | 1942 |
| OWARI | Kure | 12/39 | | |
| TOSI | | 1939 | | |

Standard Displacement: above 40,000 tons.

Speed: 30 kts.

Dimensions unreported.

Main Armament: 9 16" in triple turrets.

The Nissins are the class of great warships which Japan has been secretly building since 1937 and whose laying down was the act which precipitated the naval race that began in 1937. They were the first vessels to go above the 35,000 ton limit imposed by the Washington Treaty (other than the *Hood*, an authorized exception). About the time of Pearl Harbor, two of these seem to have been ready for sea. Two of the others should have been completed since then. However, they may have been delayed by Japan's increasing difficulties in securing ship steel. The above list of Nissins may include one or more inaccuracies. All of the names given have at one time or another been reported for other types of vessels. The names *Aki* and *Satuma* have also been reported for the fourth and fifth Nissins, with *Kii*, *Owari* and *Tosi* as names of the first three.

2 Nagato Class

Photo Page 185

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|----------|-----------|----------|----------|
| NAGATO | Kure | 8/28/17 | 11/ 9/19 | 11/25/20 |
| MUTU | Yokosuka | 6/ 1/18 | 5/31/20 | 10/24/21 |

Standard Displacement: 32,720 tons.

Dimensions: 700' x 95' x 30' (max.)

Propulsion: Four screws, four sets geared turbines, more than 80,000 SHP. Recent speed: 26 kts.

Armament: 8 16"/45 in twin turrets; 20 5.5"/50 in single mounts; 8 5" AA; numerous smaller AA undoubtedly added. 4 21" TT. Armor: 12" belt; 14" turret faces; 3.5"-7" decks. Planes: 3. Catapults: 1.

Japan's World War period battle fleet, of which the Nagatos are the two youngest members and which correspond to the U. S. Maryland class, was the world's fastest. Range and protection were sacrificed to speed. Thus the Nagatos are five knots faster than the Marylands, but four inches thinner in the turret face and amidships belt and are not carried nearly so far by the same load of fuel (4000 tons).

2 Ise Class

Photo Page 186

| Name | Builder | Keel Laid | Launched | Comp. |
|-------|------------|-----------|----------|----------|
| ISE | Kawasaki | 5/20/15 | 11/12/16 | 12/15/17 |
| HYUGA | Mitsubishi | 5/ 6/15 | 1/27/17 | 4/30/18 |

Standard Displacement: 29,990 tons.

Dimensions: 683' x 94' x 28' 8" (max.)

Propulsion: Four screws, four sets geared turbines, 45,000 SHP. Speed: 23 kts.

Armament: 12 14"/45 in twin turrets; 18 5.5"/50; 8 5" AA, additional AA probably added since war. 4 21" TT. Armor: 12" belt; 12" turret faces; decks totaling 4". Planes: 3. Catapults: 1.

Thus far, U. S. naval forces have not been able to bring Japan's newest warships to action; we have seen neither the Nissins nor the Nagatos. However, one or both ships of this class appear to have taken part in the Battle of Guadalcanal, where the Japs lost a probable two battleships and admitted the loss of one 20-year-old capital ship. This would seem to have been the *Ise*. The *Ise*s are poorly protected for 14" gun ships, a fact due in part to the unusual feature of dividing the main armament among six turrets.

3 Kongo Class

Photo Pages 186, 187

(One of these vessels, identity unknown, sunk)

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|------------|-----------|----------|---------|
| KONGO | Vickers | 1/17/11 | 5/18/12 | 8/16/13 |
| Hiei | Yokosuka | 11/ 4/11 | 11/21/12 | 8/ 4/14 |
| HARUNA | Kawasaki | 3/16/12 | 12/14/13 | 4/19/15 |
| KIRISIMA | Mitsubishi | 3/17/12 | 12/ 1/13 | 4/19/15 |

Standard Displacement: 29,330 tons. Dimensions: 704' x 92' (*Kongo*, *Hiei*), 95' (others) x 20' 9".

Propulsion: Four screws, four sets geared turbines, 64,000 SHP. Speed: 26 kts.

Armament: 8 14"/45 in twin turrets; 16 6"/50; 8 5" AA; additional AA doubtless added in refits before the war. 4 21" TT. Armor: 8" belt; 9" turret faces; decks totaling more than 7". Planes: 3. Catapults: 1.

The Kongos, one of which, the *Haruna*, the Army claims Capt. Kelly sank, but didn't, and which seems to have been the other Jap battleship destroyed by the Navy in the Battle of Guadalcanal, are Japan's oldest capital ships. They were designed by Sir George Thurston, chief designer of Vickers-Armstrong (which built one of the vessels, the *Kongo*) and one of the Britishers who developed the modern dreadnought. They began life as battle cruisers being converted to battleships in post-War-I refits by the addition of armor, etc., notwithstanding which they are still quite lightly protected. The *Hiei* and *Kongo* were demilitarized and used as training ships during the Washington Treaty period, but were rearmed for line-of-battle duties.

2 Huso Class

Photo Pages 185, 186

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|----------|-----------|----------|----------|
| HUSO | Kure | 3/11/12 | 3/28/14 | 11/ 8/15 |
| YAMASIRO | Yokosuka | 11/20/13 | 11/ 3/15 | 3/31/17 |

Standard Displacement: 29,330 tons.

Dimensions: 673' x 94' x 28' 6".

Propulsion: Four screws, four sets geared turbines, 40,000 SHP. Speed: 22.5 kts.

Armament: 12 14"/45 in twin turrets; 16 6"/50 8 5" AA; additional AA added 1932-3 and later. 2 21" TT. Armor: 12" belt; 12" turret faces; decks totaling 3.5". Planes: 3. Catapults: 1.

JAPAN - LARGE CRUISERS

3 or 4 Titibu Class

| Name | Builder | Keel Laid | Launched | Comp. |
|------------|------------|-----------|----------|----------|
| TITIBU | Mitsubishi | 3/38 | 1940 | 1941 (?) |
| NIITAKA | Sasebo | 6/38 | | 1941 (?) |
| 1 Ship | Maiduru | 1938 | | 1942 (?) |
| 1 Ship (?) | Yokosuka | 1938 ? | | |

Standard Displacement: 12,000-15,000 tons.

Dimensions unreported.

Propulsion: Geared turbines.

Speed*: 30 kts.

Armament: 6 12"/50 in triple turrets; 12 5" AA; numerous smaller. Armor*: 6" belt.

The Titibus are reputed to be "improved" pocket battleships of German inspiration. However, they may have been finished as aircraft carriers or heavy cruisers of greater-than-usual displacement. Exceptionally large Japanese cruisers have been reported by American pilots on at least two occasions; even they, however, may err. The U. S. Alaskas are being built as a reply to them; so the U. S. Navy believes that these craft were at least begun as "pocket battleships." The name *Takomatu*, also listed for a Nissin class battleship, has been reported for the third Titibu class unit.

JAPAN - CRUISERS

Japan has lost at least eight, and possibly more of what the Japanese call "first class" (heavy) cruisers, including at least one from every class. Since none has been identified, however, Japanese heavy cruisers are listed as of Dec. 1, 1941.

As of November, 1943, Japan had lost at least 18 light cruisers, about two-thirds of the number she had built or was known to be building at the start of the Pacific war. As with heavy cruisers, destroyers and submarines, however, their exact identification is seldom possible. Hence Japanese light cruisers (which the Japanese call "second class" cruisers) are with few exceptions listed as of Dec. 1, 1941. It should be further noted that Japanese losses do not signify a two-thirds reduction in cruiser strength. It is probable that several light cruisers of which we know nothing, and which are therefore not listed, have been completed.

4 Atago Class

Photo Page 189

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|------------|-----------|----------|---------|
| ATAGO | Kure | 4/28/27 | 6/16/30 | 3/30/32 |
| TAKAO | Yokosuka | 4/28/27 | 5/12/30 | 5/31/32 |
| TYOKAI | Mitsubishi | 3/26/28 | 4/ 5/31 | 6/30/32 |
| MAYA | Kawasaki | 12/ 4/28 | 11/ 8/30 | 6/30/32 |

Standard Displacement: 9,850 tons.

Dimensions: 650' x 62' 2" x 16' 5".

Propulsion: Geared turbines, 100,000 SHP.

Speed: 33 kts.

Armament: 10 8"/50 in twin turrets (arranged as triple 6" turrets of U. S. Brooklyns); 4 4.7" AA; 8 47 mm AA (possibly increased); smaller AA; 8 21" TT in twin mounts. Armor: 3"-4" side; 3" deck; 3" turret faces. Planes: 4. Catapults: 2.

All ships in this class may have been sunk. The Atagos' 8" guns are of a model with extremely high muzzle velocity and, therefore, great range.

4 Nati Class

Photo Pages 189, 190

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|------------|-----------|----------|----------|
| NATI | Kure | 11/26/24 | 6/15/27 | 11/26/28 |
| MYOKO | Yokosuka | 10/25/24 | 4/16/27 | 7/31/29 |
| ASIGARA | Kawasaki | 4/11/25 | 4/22/28 | 8/20/29 |
| HAGURO | Mitsubishi | 3/16/25 | 3/24/28 | 4/25/29 |

Standard Displacement: 10,000 tons.

Dimensions: 649' x 62' 2" x 16' 6".

Propulsion: Geared turbines, 100,000 SHP.

Speed: 33 kts.

Armament: 10 8"/50 in twin turrets (arranged as in Atago class); 8 4.7" AA (*Asigara*), 6 4.7" AA (others) in twin gunhouses; 8 47 mm AA; numerous smaller AA (possibly increased in extensive refits 1939-40). 8 21" TT in quadruple mounts. Armor: 3" side; 3" turret faces; 2"-3" deck. Planes: 4. Catapults: 2. All vessels in this class may have been lost.

4 Kako Class

Photo Pages 189, 191

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|------------|-----------|----------|---------|
| KAKO | Kawasaki | 11/17/22 | 3/10/25 | 7/20/26 |
| HURUTAKA | Mitsubishi | 12/ 5/22 | 2/25/25 | 3/31/26 |
| KINUGASA | Kawasaki | 1/23/24 | 10/24/26 | 9/30/27 |
| AOBA | Mitsubishi | 2/ 4/24 | 9/25/26 | 9/20/27 |

Standard Displacement: 7,100 tons.

Dimensions: 595' x 50' 9" x 14' 9".

Propulsion: Geared turbines, 95,000 SHP.

Speed: 33 kts.

Armament: 6 8"/50 in twin turrets; 4 4.7" AA; numerous smaller (possibly increased in refits, 1938-39); 12 21" TT in quadruple mounts. Armor: 2" side; 1.5" turret faces; 2" deck. Planes: 2. Catapults: 1.

The *Koko* and *Hurutaka* were originally built with each 8" gun in its own gunhouse. Main batteries were twinned in the 1938-39 refits. The *Kako* and *Hurutaka* probably are sunk, as are possibly the other two of this class.

4 or 5 "Improved Tikuma" Class

It was reported in 1941 that four or five cruisers of 7,000 to 9,000 tons displacement and armed with 12 6.1" guns in triple turrets were under construction. These are likely to be modifications of the *Tikuma* type, including the *Tikuma*'s unusual seaplane deck aft. However, the reports of these "improved Tikumas" may actually refer to the Titibus or the Tugarus, and possibly even to the Nissin class battleships. *Tikuma*-type vessels have been seen only singly and at infrequent intervals by American forces. Names reported for two of these ships are *Agano* and *Oyodo*.

2 Tikuma Class

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|------------|-----------|----------|----------|
| TONE | Mitsubishi | 12/ 1/34 | 11/21/37 | 11/20/38 |
| TIKUMA | Mitsubishi | 10/ 1/35 | 3/18/38 | 1939 |

Standard Displacement: 8,500 tons.

Dimensions: 614' 3" p.p. x 63' x 14' 9".

Propulsion: Four screws, four sets geared turbines, 90,000 SHP. Speed: 33 kts.

Armament: 12 6.1" in triple turrets; 8 5" AA in twin gunhouses; numerous smaller AA. 12 21" TT in triple mounts. Armor*: 2" deck; 2" belt. Planes: 6. Catapults: 2.

The *Tikuma* and her sister are unusual modifications of the Mogami class of light cruiser inspired by Sweden's *Gotland* (as the latter was before conversion to a straight cruiser). The *Tikuma*'s main armament is reduced to save top weight (the Mogamis were topheavy). Moreover, all four *Tikuma* turrets are grouped forward, making room for a small *Gotland*-type seaplane launching deck aft.

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107' Diesel Cruiser



46' Auxiliary Ketch

3 Mogami Class

Photo Page 190

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|------------|-----------|----------|----------|
| MOGAMI | Mitsubishi | 12/24/31 | 5/31/34 | 8/29/35 |
| SUZUYA | Yokosuka | 12/11/33 | 11/20/34 | 10/31/37 |
| KUMANO | Kawasaki | 4/ 5/34 | 10/15/36 | 10/31/37 |

Standard Displacement: 8,500 tons. Dimensions: 639' 9" x 59' 9" x 14' 9".

Propulsion: Four screws, four sets geared turbines, 90,000 SHP. Speed: 33 kts.

Armament: 1S 6.1" in triple turrets; S S" AA in twin gunhouses; numerous smaller AA. 12 21" TT in triple mounts. Armor: 2" belt; 2" deck. Planes: 4. Catapults: 2.

Photographs of a crippled Mogami class cruiser indicate that some or all of the Mogamis may have been rearmed with 8 or 10 8" guns. The wisdom of such a change is doubtful because as 6.1"-gun ships, the Mogamis were topheavy, and as 8"-gun vessels they would be even more unwieldy. The Mogamis' turrets—whatever the guns now in them—are arranged somewhat unusually: the last rather than the second of the three turrets forward is the one mounted on a raised barrette. The Mogamis, which inspired the U. S. Brooklyns (much better ships, since their 10,000-ton hulls are much better able to take so heavy an armament as 15 6" guns) have not been particularly successful. One unit of this class, the *Mikumo*, has been quite definitely identified as sunk and so is omitted from the above list.

3 Zintu Class

Photo Page 190

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|------------|-----------|----------|----------|
| SENDAI | Mitsubishi | 2/16/22 | 10/30/23 | 4/29/24 |
| ZINTU | Kawasaki | 8/ 4/22 | 12/ 8/23 | 7/31/25 |
| NAKA | Yokohama | 6/10/22 | 3/24/25 | 11/30/25 |

Standard Displacement: 5,195 tons. Dimensions: S35' x 46' 9" x 15' 10".

Propulsion: Four screws, four sets geared turbines, 70,000 SHP. Speed: 33 kts.

Armament: 7 5.5"/50 in single gunhouses; as of 1939 (probably increased much since), 2 3" AA; several smaller AA. 8 21" TT in twin mounts. Armor: 2" belt; other details unreported. Planes: 1. Catapults: 1.

The Zintus are of the obsolete type of one-gun-gunhouse light cruisers built during the last war. Completion of one, the *Naka*, was delayed by the earthquake of 1923. That Japan was still building them five years after the war shows how much Japanese shipbuilding lagged at that time. The Zintus' hulls are identical with the hulls of the *Natori* and *Kuma* classes, and are quite similar in other respects, including the mixed firing of the boilers. All three of these classes of light cruisers have suffered heavily in the war. The Zintus were extensively refitted in 1940.

6 Natori Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|------------|-----------|----------|----------|
| NAGARA | Sasebo | 9/ 9/20 | 4/25/21 | 4/21/22 |
| ISUZU | Uraga | 8/10/20 | 10/29/21 | 8/15/23 |
| YURA | Sasebo | 5/21/21 | 2/15/22 | 3/20/23 |
| NATORI | Mitsubishi | 12/14/20 | 2/16/22 | 9/15/22 |
| KINU | Kawasaki | 1/17/21 | 5/29/22 | 11/10/22 |
| ABUKUMA | Uraga | 12/ 8/21 | 3/16/23 | 5/26/25 |

Standard Displacement: 5,170 tons. Dimensions: 535' x 46' 9" x 15' 10".

Propulsion: Four screws, four sets geared turbines, 70,000 SHP. Speed: 33 kts.

Armament: 7 5.5"/50 in single gunhouses; as of 1939 (probably increased in *Abukuma*, refitted 1939, and possibly in others), 2 3"/40 AA; several smaller AA. 8 21" TT in twin mounts. Armor: 2" belt; other details unreported. Planes: 1. Catapults: 1.

More than half this class of vessel have probably been lost in action. The *Natoris* are almost exactly like the *Kumas* in every respect, differing mainly in having more coal-fired and fewer oil-burning boilers. The completion of the *Abukumo* was delayed by the great Yokohama earthquake.

5 Kuma Class

| Name | Builder | Keel Laid | Launched | Comp. |
|----------|------------|-----------|----------|----------|
| KUMA | Sasebo | 8/29/18 | 7/14/19 | 8/31/20 |
| TAMA | Mitsubishi | 8/10/18 | 2/10/20 | 1/29/21 |
| KITAKAMI | Sasebo | 9/ 1/19 | 7/ 3/20 | 4/15/21 |
| OI | Kawasaki | 11/24/19 | 7/1S/20 | 10/ 3/21 |
| KISO | Mitsubishi | 6/10/19 | 12/14/20 | 5/ 4/21 |

Standard Displacement: 5,100 tons. Dimensions: 535' x 46' 9" x 15' 9".

Propulsion: Four screws, four sets geared turbines, 70,000 SHP. Speed: 33 kts.

Armament: 7 5.5"/50 in single gunhouses; as of 1940 (possibly increased since), 2 3"/40 AA; several smaller AA. 8 21" TT in twin mounts. Armor: 2" belt; other details unreported. Planes: 1 (added 1927). Catapults: 1 (added 1927).

Owing to her dependence on imports for oil supplies, Japan stuck to coal longer than any other major naval power. Like most of her vessels of the post-War 1 years, consequently, the *Kumas*' boilers are both coal- and oil-fired.

1 Yubari Class

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|---------|-----------|----------|-------|
| YUBARI | Sasebo | 6/ 5/22 | 3/ 5/23 | 1925 |

Standard Displacement: 2,890 tons. Dimensions: 435' x 39' 6" x 11' 9".

Propulsion: Three screws, three sets geared turbines, 57,000 SHP. Speed: 33 kts.

Armament: 6 S.5"/50 in a twin over a single turret forward and a twin over a single turret astern; 1 3"/40 AA; several smaller AA. 4 21" TT in twin mounts arranged to fire on either broadside. Carries 34 mines. Armor: 2" belt; other details unreported. Planes: 0. Catapults: 0.

The *Yubari*, also a coal-and-oil burner, is actually hardly more than a large destroyer-minelayer, comparable in size, but much inferior in performance to the French *Mogadors* and Russian *Leningrads* of many years later. Possibly sunk.

2 Tenryu Class

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|----------|-----------|----------|----------|
| TENRYU | Yokosuka | 5/17/17 | 3/11/18 | 11/20/19 |
| TATUTA | Sasebo | 7/24/17 | 5/21/18 | 3/31/19 |

Standard Displacement: 3,230 tons. Dimensions: 468' x 40' 9" x 13'.

Propulsion: Three screws, three sets geared turbines, S1,000 SHP. Speed: 31 kts.

Armament: 4 S.5"/50 in single, open mounts; 2 3"/40 AA (possibly recently increased); several smaller. 6 21" TT in triple mounts arranged to fire on either broadside. Fitted as minelayers. Armor: 2" belt; other details unreported. Planes: 0. Catapults: 0.

The *Tenryu* and her sister, probably used mainly as minelayers and among Japan's numerous coal-and-oil burners, are actually slow, oversize destroyers, although rated as cruisers because of their armor and caliber of their guns.

JAPAN - TRAINING CRUISERS

3 Katori Class

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|------------|-----------|----------|---------|
| KATORI | Mitsubishi | 8/24/38 | 6/17/39 | 4/20/40 |
| KASIMA | Mitsubishi | | 10/ 2/39 | 9/2S/40 |
| KASII | Mitsubishi | | 10/1S/40 | 1941 |

Standard Displacement: 5,800 tons. Dimensions: 42S' x 52' x 18'.

Propulsion: Two screws, two sets geared turbines, 8,000 SHP. Speed: 18 kts.

Armament: 4 5.5" in twin turrets; 2 5" AA; several smaller. 8 21" TT. Armor: 2" deck.

The *Katoris* are probably employed on patrol and minelaying as well as training duties.

JAPAN - OBSOLETE CRUISERS

In addition to her many more modern vessels, at the beginning of the war in the Pacific Japan had on her navy list six ancient cruisers used for coast defense, training and miscellaneous duties. They were:

ASAMA (built by Armstrong, England; launched March, 1898). 9,240 tons standard displacement; designed HP forced, 21.2S kts.; 4 B"/40, 8 6"/40, S 3" AA, 4 2.5 pounders, 4 18" TT submerged; 7" armor belt. *Asama* was refitted in 1915, used as Cadets' Training Ship.

ADUMA (built at St. Nazaire, France; launched June 24, 1899). 8,640 tons standard displacement; present speed, 16 kts.; 4 B", 8 6" and several smaller guns; 4 TT; 7" armor belt.

YAKUMO (built in Great Britain; launched July 8, 1899). 9,010 tons standard displacement; present speed, 13 kts.; 4 8", 8 6" and several smaller guns; 2 TT; 7" armor belt.

IDUMO (built by Armstrong of England; launched Sept. 19, 1899); IWATE (Armstrong; March 29, 1900). 9,180 tons standard displacement; present speed, 16 kts. (*Idumo*) 13 kts. (*Iwate*); 4 8", 7 6" and several smaller guns; 4 TT; 7" armor belt.

KASUGA (ex-*Rivadavia*; Ansaldo, Italy; Oct. 22, 1902). 7,080 tons standard displacement; present speed, 15 kts.; 2 B", 4 6" and several smaller guns; 4 18" TT; 6" armor belt. The *Kasuga* was built for Argentina. Japan purchased her in 1904 in preparation for her then coming war with Russia (1904-S).

JAPAN - DESTROYERS

Since Dec. 7, 1941, Japan has lost (through November, 1943) between 50 and 100 destroyers, only three of which, the *Takanami*, *Uranami* and *Hamakaze*, have been publicly identified with any certainty. Hence, the listings below are as of the end of 1941, with additional listings for certain names reported abroad.

Terutuki Class

Reports abroad state that Japan has under construction a class of destroyers about 400 feet in length, armed with eight five-inch dual purpose guns in twin turrets and capable of more than 40 knots speed. They would appear to have a displacement of about 2200 tons, and are also said to have the single raked funnel characteristic of the *Kagero* type of destroyer and other modern Japanese ships. In fact, they are believed to be enlarged *Kageros*. In size, they are a little larger than the U. S. *Fletchers*, and smaller than the French *Mogadors* and Soviet *Leningrads*. The following names have been reported for them: *Akigumo*, *Akituki*, *Arazuki*, *Hatutuki*, *Kaziguma*, *Makigumo*, *Naganami*, *Sinakaze*, *Suzutuki*, *Terutuki*, *Wakinami*, *Wakutuki* and *Yuguma*. Some of these—if they exist—may be *Kageros* of ordinary type or belong to 1800-ton group. *Takanami*, sunk off New Guinea, 1942, believed a *Terutuki*.

10 1,800-ton Class (?)

Shortly after Pearl Harbor, well-founded reports were current that Japan had under construction a class of destroyers intermediate in size between the *Asasios* and *Kageros*. No names or other particulars have been reported for them since. If they exist, some of the *Terutuki* names listed above may belong to this group.

18 or more Kagero Class

KAGERO, KUROGIO, OYASIO, SIRANUI (all 1938); AMATUKAZE, HAGIKAZE, HATUKAZE, HAYASIO, ISOKAZE, KURUKAZE, NATUSIO, TOKITUKAZE, YUKIKAZE (all 1939); ARASI, MAIKAZE, NOWAKE, TANIKAZE, URAKAZE (all 1940); and others. Standard Displacement: 2,000 tons. Dimensions: 364' x 35' x 11'. Propulsion: Two screws, two sets geared turbines, 45,000 SHP. Speed: 36 kts. Armament: 6 S" in twin gunhouses; several smaller; 8 21" TT in quadruple mounts; DCTs.

Japan's *Kageros*—the reason for the U. S. going to 2,100 tons in the *Fletcher* class—were at first believed enlargements of the *Asasio* design, but are now known to be strikingly different. The *Kageros* have a single raked funnel and handsome streamlines. *Hamakaze*, lost 1942, was probably a *Kagero*.

10 Asasio Class

ASASIO (1936); MITSIO, OSIO, ARASIO, NATUGUMO, YAMAGUMO, MINEGUMO, ASAGUMO, KASUMI, ARARE (all 1937). Standard Displacement: 1,500 tons. Dimensions: 356' x 33' 4" x 9'. Propulsion: Two screws, two sets geared turbines, 38,000 SHP. Speed: 34 kts. Armament: 6 S" in twin gunhouses; several smaller, AA; 8 21" TT in quadruple mounts; DCTs.

Like other modern Japanese destroyers, the *Asasios* have a characteristically flaring forepeak. The *Asasios*, however, are the last class with two funnels.

10 Sigure Class

SIRATUYU, SIGURE, MURASAME, YUDATI, SAMIDARE, HARUSAME (all 1935); YAMAKAZE, KAWAKAZE, UMIKAZE (all 1936); SUZUKAZE (1937). Standard Displacement: 1,370 tons. Dimensions: 335' 6" x 31' 9" x 9' 3". Propulsion: Two screws, two sets geared turbines, 37,000 SHP. Speed: 34 kts. Armament: S S" in two twin and one single gunhouse; several smaller; 8 21" TT in quadruple mounts. DCTs.

6 Hatuharu Class

Photo Page 191

NENOHI (1932), HATUHARU (1933), HATUSIMO (1933), WAKABA (1934), YUGURE (1934), ARIAKE (1934). Standard Displacement: 1,370 tons. Dimensions: 337' 9" x 32' 6" x 8' 9". Propulsion: Two screws, two sets geared turbines, 37,000 SHP. Speed: 34 kts. Armament: S S" in two twin and one single gunhouse; several smaller, AA; 6 21" TT in triple mounts; DCTs.

The *Hatuharus* were to have had eight torpedo tubes. The capsizing of the torpedo boat *Tomoduru* in 1934 from top-heaviness, however, caused the Japanese to reduce the *Hatuharus'* torpedo armament by two tubes to cut down top weight.

4 Hibiki Class

IKADUTI (1931), INADUMA (1932), AKATUKI (1932), HIBIKI (1932). Standard Displacement: 1,700 tons. Dimensions: 377' 6" x 33' 9" x 9' 9". Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 34 kts. Armament: 6 S"/50 in twin gunhouses; several smaller, AA; 9 21" TT in triple mounts; DCTs.

10 Amagiri Class

Photo Page 191

SIKINAMI, AYANAMI, ASAGIRI, SAGIRI (all 1929); AMAGIRI, YUGIRI, AKEBONO, OSORO, USIO (all 1930); SAZANAMI (1931). Specifications identical with *Hibiki* class.

The *Amagiris* differ from the *Hibikis* only in minor respects, as also the *Sinonomes*, and the three groups are often grouped as a single class. The *Miyuki* of the *Amagiri* type was lost by collision in 1934, and the *Uranami*, one of the few vessels Japan has admitted she has lost in action, was torpedoed by a Dutch submarine off Sarawak in 1941.

8 Sinonome Class

MURAKUMO, HATUYUKI, HUBUKI, ISONAMI, SINONOME, USUGUMO, SIRAKUMO (all 1927); SIRAYUKI (1928). Specifications identical with *Hibiki* class.

The *Sinonomes* differ from the *Hibikis* and *Amagiris* only in minor fittings.

12 Mutuki Class

MUTUKI (ex-19, 1925), KISARAGI (ex-21, 1925), YAYOI (ex-23, 1925), UDUKI (ex-25, 1925), SATUKI (ex-27, 1925), MINATUKI (ex-28, 1926), HUMITUKI (ex-29, 1926), NAGATUKI (ex-30, 1926), KIKUTUKI (ex-31, 1926), MIKADUKI (ex-32, 1926), MOTIDUKI (ex-33, 1927), YUDUKI (ex-34, 1927). Standard Displacement: 1,315 tons. Dimensions: 320' pp. x 30' x 9' max. Propulsion: Two screws, two sets geared turbines, 38,500 SHP. Speed: 34 kts. Armament: 4 4.7"/50; several smaller, AA; 6 21" TT in triple mounts; DCTs.

The *Mutukis* are slightly enlarged *Kamikazes*.

9 Kamikaze Class

KAMIKAZE (ex-1, 1922), ASAKAZE (ex-3, 1922), HARUKAZE (ex-5, 1922), MATUKAZE (ex-7, 1923), HATAKAZE (ex-9, 1924), OITE (ex-11, 1924), HAYATE (ex-13, 1925), ASANAGI (ex-15, 1924), YUNAGI (ex-17, 1924). Standard Displacement: 1,270 tons. Dimensions: 320' pp. x 30' x 9' 7" max. Propulsion: Two screws, two sets geared turbines, 38,500 SHP. Speed: 34 kts. Armament: 4 4.7"/50; several smaller, AA; 6 21" TT in triple mounts; DCTs.

6 Wakatake Class

WAKATAKE (ex-2, 1922), KURETAKE (ex-4, 1922), SANAYE (ex-6, 1923), ASAGAO (ex-10, 1922), HUYO (ex-16, 1922), KARUKAYA (ex-18, 1923). Standard Displacement: 820 tons. Dimensions: 275' x 26' 6" x 8' 3". Propulsion: Two screws, two sets geared turbines, 21,500 SHP. Speed: 31.5 kts. Armament: 3 4.7"/45; several smaller, AA; 4 21" TT in pairs; DCTs.

The Wakatakes and other Japanese destroyers below 1,000 tons in displacement are rated "second class" destroyers. The *Sawarabi* of this class was lost in a storm in 1932 and the *Yugao* was scrapped in 1940. Japanese destroyers were generally numbered rather than named until 1928.

13 Akikaze Class

Photo Page 191

SAWAKAZE (1919), MINEKAZE (1919), OKIKAZE (1919), YAKAZE (1920), HAKAZE (1920), SIOKAZE (1920), AKIKAZE (1920), TATIKAZE (1921), YUKAZE (1921), NOKAZE (1921), HOKAZE (1921), NUMAKAZE (1922), NAMIKAZE (1922). Standard Displacement: 1,215 tons. Dimensions: 336' 6" x 29' 3" x 9' 6". Propulsion: Four screws, four sets geared turbines, 38,500 SHP. Speed: 34 kts. Armament: 4 4.7"/45; several smaller, AA; 6 21" TT in twin mounts; DCTs.

3 Kuri Class

Photo Page 191

KURI (1920), TUGA (1920), HASU (1921). Standard Displacement: 770 tons. Dimensions: 275' x 26' x 8'. Propulsion: Two screws, two sets direct drive turbines, 21,500 SHP (*Hasu*), 17,500 (others). Speed: 31.5 kts. Armament: 3 4.7"/45; some smaller; 4 21" TT in pairs; DCTs.

The *Kuri*, *Tuga* and *Hasu* are the sole survivors of a once numerous class of Japanese "second class" destroyers. One, the *Warabi*, was lost by collision in 1927; 17 others were scrapped, 1932-40.

JAPAN - TORPEDO BOATS

8 Otori Class

OTORI, HIYODORI, HAYABUSA, KASASAGI (all 1935); KARI, HATO, KIZI, SAGI (all 1937). Standard Displacement: 595 tons. Dimensions: 263' x 26' x 6' 9". Propulsion: Two screws, two sets geared turbines, 9,000 SHP. Speed: 28 kts. Armament: 3 4.7"/40; machine guns; 3 21" TT in triple mount.

The Otoris were designed for service in the shallow waters of the Yellow Sea and for operations on the Asiatic coast generally. Their armament was to have been heavier but was reduced following the *Tomoduru* accident.

4 Tidori Class

TIDORI, MANADURU, TOMODURU, HATUKARI (all 1933). Standard Displacement: 527 tons. Dimensions: 254' x 24' x 6'. Propulsion: Geared turbines, 7,000 SHP. Speed: 26 kts. Armament: 3 4.7"/40; machine guns; 2 21" TT in double mount.

The *Tomoduru* foundered because of excessive top weight in 1934. She was salvaged and her own and her sisters' armament reduced to cut down topheaviness.

JAPAN - ANTI-SUBMARINE

GUNBOAT TYPE

In addition to units listed below, in 1943 Japan had in service 20 or more armed merchant vessels rated as auxiliary gunboats and engaged largely on escort duties.

Also additional to those below, several gunboats of unspecified design were under construction in 1943. An announcement by the Berlin radio in January, 1944 of Japanese development of a new type of gunboat may refer to these vessels.

ASUGA (ex-*Ming Chi*), HITENOSE (ex-*Ming Sai*). Former Chinese vessels, taken over by the enemy.

YODO. No particulars reported.

Hasidate Class: HASIDATE, UJI and possibly others. No particulars stated, but are understood to be of large size, approximately equivalent to British sloops. Have characteristic modern Japanese single raked funnel and three 4.7" guns each, two forward and one aft. *Uji* reported as new Yangtze flagship.

ATAKA (ex-*Nakaso*, Yokohama, 1922). Displacement: 725 tons. 222' x 32' x 7' 6". Reciprocating engines, 1,700 HP. 16 kts. Armament: 2 4.7", 2 3" AA. Fitted for salvage work.

SAGA (Sasebo, 1912). Displacement: 685 tons. 210' x 29' 4" x 7' 3". Coal-burning reciprocating engines, three screws, 1,600 HP. 15 kts. Armament: 1 4.7", 3 3" AA, 6 MG.

SUB CHASER TYPE

(Many of these have probably been lost).

No. 101 and others. This is the latest type of Japanese sub chaser. The number built is possibly quite large. No particulars have been reported, but they are generally comparable to the U. S. PC boats.

No. 51-55 and possibly others (1937 and later). Displacement: 170 tons. 146' x 15' 4" x 5' 6". Diesel (except 53, stated to be turbine-driven), 3,000 HP. 23 kts. Armament: 1 AA gun of about 3" caliber; depth charges.

Nos. 3-5 (1938); 6, 7 (both 1939); 8, 9 (both 1938); 10-12 (1939), and a score or more units numbered in sequence. Standard Displacement: 290 tons. 180' x 18' x 6' 6". 2,600 HP. 20 kts. Armament: Originally 4 MG and depth charges, now probably heavier. No. 3 has been reported no longer in service.

Nos. 1, 2 (both 1933). Displacement: 300 tons. 210' 6" x 19' 9" x 5'. Diesels, 3,400 HP. 24 kts. Armament: 4 MG and depth charges.

JAPAN - SUBMARINES

In the period just before Pearl Harbor, Japan was building submarines at the rate of about 20 a year. This may have been increased. Very few Japanese submarine war losses have been publicly identified. Hence, in general the list below is as of Dec. 7, 1941, except for the inclusion of additional units understood to have been completed since.

OCEAN-GOING TYPES

Beside the classes so far identified, the existence of an I-176 type has been reported, although without confirmation.

I-101 Class

I-101 and an unknown number of others, all completed since Pearl Harbor. No particulars known.

I-76 Class

I-76 and an unstated number of others, all likewise new. No data available.

I-9 Class

I-9-14 (1937 and later); 15 (1939), 16 (1938), 17 (1939), 18 (1938), 19-24 (all 1939); 25 (1939), 26-28 (1939-40), 29 (1940), 30-33 (1940 or later) and several others. Generally understood to be a single type, with specifications as follows: Displacement: 2,180 tons, surface; submerged, unreported. 348' x 30' x 16'. Diesels, 9,000 HP, 20 kts. on surface. Electric motor HP and underwater performance, unreported. Armament: 8 21" TT (six bow, two stern), 1 5.5", 2 MG AA. These figures, however, which would make this class the largest of Japanese submarines and among the largest in any navy, have actually been reported only for I-15-24; I-9-14 are represented as similar to I-7 and I-25-33 as enlarged editions of I-71.



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I-7 Class

I-7 (1935), 8 (1936). Displacement: 1,950 tons, surface; 2,600, submerged. 356' 9" x 29' 9" x 14' 6". Diesels, 6,000 HP. 17 kts., surface; 9, submerged. Armament: 6 21" TT, 2 5.5", 2 MG AA.

I-171 Class

I-171 (ex-I-71, 1934), 172 (ex-72, 1935), 173 (ex-73, 1935), 174 (ex-74, 1937), 175 (ex-75, 1936). Generally similar to I-168, but armed with 1 4.7" gun instead of 1 4" and 1 MG.

I-6 Class

I-6 (1934). Displacement: 1,900 tons, surface; 2,500, submerged. 343' 6" x 29' 9" x 15' 6". Diesels, 6,000 HP. 17 kts., surface; 9, submerged. Armament: 6 21" TT, 1 5", 2 MG AA.

I-168 Class

I-168 (ex-I-68, 1933), 169 (ex-69, 1934), 170 (ex-70, 1934). Displacement: 1,400 tons, surface; submerged, unreported. 331' 4" x 27' x 13'. Diesels, 6,000 HP. 20 kts., surface; 9, submerged. Armament: 6 21" TT, 1 4", 1 MG AA.

I-165 Class

I-165 (ex-I-65), 166 (ex-66) (both 1931). Displacement: 1,638 tons, surface; 2,100, submerged. 321' 6" x 27' x 16'. Diesels, 6,000 HP, and electric motors, 1,800. 19 kts., surface; 9, submerged. Armament: 6 21" TT, 1 4", 1 MG AA. I-67 of this type foundered in 1940.

I-153 Class

Photo Page 192

I-153 (ex-I-53, ex-No. 64, 1925), I-154 (ex-I-54, ex-No. 77, 1926), I-155 (ex-I-55, ex-No. 78, 1925), I-156 (ex-I-56, 1928), I-157 (ex-I-57, 1928), I-158 (ex-I-58, 1925), I-159 (ex-I-59, 1929), I-161 (ex-I-61, 1927), I-162 (ex-I-62, 1928), I-163 (ex-I-63, 1927), I-164 (ex-I-64, 1929). Displacement: 1,635 tons, surface; 2,100, submerged. 321' 6" (I-162-4), 331' (others) x 25' 6" (I-162-4), 26' (others) x 16'. Diesels, 6,000 HP, and electric motors, 1,800. 19 kts., surface; 9, submerged. Armament: 6 21" TT (I-162-4), 8 21" TT (others), 1 4.7", 1 MG AA. I-160 is a war loss. I-163 and I-161 were sunk in maneuvers before the war but both have been salvaged and refitted.

I-1 Class

Photo Page 192

I-1 (ex-No. 74, 1924), I-2 (ex-No. 75, 1925), I-3 (ex-No. 76, 1925), I-4 (1928). Displacement: 1,955 tons, surface; 2,480, submerged. 320' x 30' 3" x 15' 9". Diesels, 6,000 HP, and electric motors, 1,800. 17 kts., surface; 9, submerged. 6 21" TT, 2 5.5", 2 MG AA. I-5 of this type accidentally lost in 1941. Design based on one of larger German U-boats, U-125, of World War, acquired by Japan after the Armistice and carried for many years on the Japanese navy list as O-1.

I-151 Class

I-151 (ex-I-51, ex-No. 44), I-152 (ex-I-52, ex-No. 51, 1922). Displacement: 1,390 tons, surface; 2,000, submerged. 331' x 25' x 17'. Diesels, 6,000 HP, and electric motors, 1,800. 19 kts., surface; 9, submerged. Armament: 8 21" TT, 1 4.7", 1 MG AA. I-151 has been reported, without confirmation, as decommissioned.

COASTAL TYPE

Ro. 100 Class

Ro. 100 and others. Of recent construction. No particulars available.

Ro. 33 Class

Ro. 33 (1934), Ro. 34 (1935) and several others. Displacement: 700 tons, surface; submerged, unreported. 239' 6" x 22' x 12'. Diesels, 2,600 HP. 16 kts., surface; 9, submerged. Armament: 4 21" TT (all in bow), 1 3" AA.

Ro. 60 Class

Ro. 60 (ex-No. 59), Ro. 62 (ex-No. 73), Ro. 63 (ex-No. 84), Ro. 64-68 (all 1923-25). Displacement: 988 tons, surface; 1,300, submerged. 250' p.p. x 24' x 13'. Diesels, 2,400 HP, and electric motors, 1,800. 16 kts., surface; 10, submerged. Armament: 6 21" TT, 1 3", 1 MG AA. Ro. 61 is a war loss.

Ro. 57 Class

Ro. 57 (ex-No. 46), Ro. 58 (ex-No. 47), Ro. 59 (ex-No. 57). Survivors of an old class of submarines, most of which have been scrapped. Used for training only.

MINELAYING TYPE

The existence of an I-128 has been reported. If the report is correct, Japan may have an I-125-128 group of submarine minelayers.

I-121 Class

I-121 (ex-I-21, ex-No. 48, 1926), I-122 (ex-I-22, ex-No. 49, 1926), I-123 (ex-I-23, ex-No. 50, 1927), I-124 (ex-I-24, 1927). Displacement: 1,142 tons, surface; 1,470, submerged. 279' 6" x 24' 9" x 14' 3". Diesels, 2,400 HP, and electric motors, 1,200. 14 kts., surface; 9.5, submerged. Armament: 4 21" TT, 1 5.5", 42 mines. Resemble German U8 submarine minelayers of World War period.

Ro. 30 Class

Ro. 30 (ex-No. 69), Ro. 31 (ex-No. 70), Ro. 32 (ex-No. 71) (1923-26). Displacement: 655 tons, surface; 1,000, submerged. 243' 6" p.p. x 20' x 12'. Diesels, 1,200 HP, and electric motors, 1,200. 13 kts., surface; 10, submerged. Armament: 4 21" TT, 1 4.7", 1 3-pounder AA, unstated number of mines. Ro. 31 sank during trials but was salvaged.

MIDGET TYPE

Photo Page 192

The Japanese attack on Pearl Harbor, Dec. 7, 1941, involved midget submarines of about 50 tons surface and 87 tons submerged displacement, each armed with two torpedo tubes and manned by two men. Three were destroyed by U. S. forces. A second attempt to invade a harbor by their means, at Sydney, May 31, 1942, was similarly unfruitful, with only a harbor ferry sunk and four of the attackers destroyed.

JAPAN - AUXILIARIES AND SPECIAL TYPES

MERCHANT RAIDERS

The battle between the Indian minesweeper *Bengal* and the Dutch tanker *Ondina*, on the one hand, and two heavily armed Japanese merchantmen, on the other, on Nov. 11, 1942, in the Indian Ocean makes it clear that Japan has been employing armed merchant cruisers as raiders, at least experimentally. The two Japanese vessels in that engagement, the larger of which was sunk, were *Kunikawa Maru*, 6,863 tons gross, and *Kikoku Maru*, 10,000 tons gross. Each was armed with six 5.5" guns, torpedo tubes and carried at least two seaplanes. Names of other Japanese merchant raiders, however, are not known.

MOTOR TORPEDO BOATS

Japan was late in developing the MTB, most units having been built only since the outbreak of the war. Consequently, little is known about them. It is believed that two score or more are in service.

OCEAN-GOING MINELAYERS

Togaru, listed elsewhere as a submarine tender and sometimes also reported as a novel combination cruiser and aircraft carrier, has been described in some reports as a large minelayer.

Hatutaka Class

HATUTAKA (1939), AOTAKA (1940), WAKATAKA (launch date unreported) and possibly others. No details available, but appear to be enlarged versions of *Yaeyama*.

Simusu Class

SIMUSU (also given as *Sumisu*, 1939); HACHIJO, ISIGAKI, KUNAJIRI (all 1940); MIYAKO, possibly HASIDATE (1939), TANJURU (1940) and others. May be coastal minelayers of Sokuten type. Otherwise, particulars unknown.

Various Types

OKINOSIMA (11/15/35). Standard Displacement: 4,400 tons. 386' 6" x 51' 4" x 16' 6". Geared turbines, 9,000 SHP. 20 kts. Armament: 4 5.5", 4 MG. Possibly lost.

YAEYAMA (11/15/31). Standard Displacement: 1,135 tons. 280' 4" x 30' 6" x 8'. Mixed firing, reciprocating engines, 4,800 HP. 20 kts. Armament: 2 4.7" AA, 2 MG AA. Also fitted as netlayer.

ITUKISIMA (5/22/29). Standard Displacement: 1,970 tons. 328' x 42' x 10'. Three screws, Diesel engines, 3,000 HP. 16 kts. Armament: 3 5.5"/50, 2 3" AA, 2 DCT. Mine capacity: 250 large or 500 small. First Diesel-driven ship in Japanese navy. Is a small version of British minelayer *Adventure*.

SIRATAKA (1/25/29). Standard Displacement: 1,345 tons. 260' x 38' x 9'. Reciprocating engines, 2,200 HP. 16 kts. Armament: 3 4.7", 1 MG AA. Also fitted as netlayer.

KATURIKI (1916). Displacement: 1,540 tons. 240' x 39' x 14'. Reciprocating engines, 1,800 HP. 13 kts. Armament: 3 3". Mine capacity: 150 mines. Also fitted as minesweeper.

TOKIWA (1898). Ex-cruiser, built in England. Displacement: 9,240 tons. 442' x 67' 3" x 24' 3". Coal-fired reciprocating engines, 18,000 HP. 21 kts. Armament: 2 8", 8 6", 2 3", 1 3" AA. Armor: 3.5"-7" belt, 2" deck, 6" turret. Adapted to minelaying in 1929.

COASTAL MINELAYERS

Tosima Class

ASIZAKI (possibly *Asijaki*), ENOSIMA, ERUTO, KATASIMA, KATOKU, KUROKAMI, KUROSIMA, KUROZAKI (possibly *Kurojaki*), NINOSIMA, TOSIMA and perhaps others. No details available. May resemble Sokuten class.

Yurisima Class

ARASUKI, BOKO, HIRASIMA, ISIZAKI (possibly *Isijaki*), MAISIMA, MOROSIMA, NURASIMA, SAGISAKI, SAISHU, TAKASIMA, YURISIMA and possibly others. No details reported. May resemble Sokuten class.

Sokuten Class

SIRAKAMI (1938), SOKUTEN (1938), KYOSAI (1939), NARIU (1939), UKISIMA (launch date unreported) and possibly others. Displacement: 720 tons. 239' x 25' 9" x 8' 4". Diesels, 3,600 HP. 20 kts. Armament: 2 or 3 4.7", some smaller.

Natusima Class

SARUSIMA (1933), NASAMI (1934), NATUSIMA (1934). Displacement: 443 tons. 225' x 24' 6" x 5' 6". Diesels, 2,100 HP (*Sarusima*), 2,300 (others). 19 kts. Armament: 2 3" AA, 1 MG.

Tubame Class

KAMOME, TUBAME (both 1929). Standard Displacement: 450 tons. 206' 8" x 23' 6" x 6' 4". Reciprocating engines, 2,500 HP. 19 kts. Armament: 1 3" AA, 1 MG. Also fitted as netlayers.

MINESWEEPERS

A large number of minesweepers beyond those reported below has been under construction. Some have doubtless been completed.

Nos. 7-11 (all 1938), 12 (1939). Displacement: 630 tons. 226' x 25' 9" x 7' 8". Coal-fired reciprocating engines, 3,850 HP. 20 kts. Armament: 3 4.7", 2 MG.

Nos. 17, 18 (both 1935) and probably 19-24 (launch dates unreported). Displacement: 511 tons. 218' x 25' 4" x 6' 6". Coal-fired reciprocating engines, 3,200 HP. 19 kts. Armament: 2 4.7", 2 MG.

Nos. 13, 14 (both 1933); 15, 16 (both 1934). Displacement: 492 tons. 232' 3" x 25' x 6'. Coal-fired reciprocating engines, 3,200 HP. 20 kts. Armament: 2 4.7", 2 MG.

Nos. 1-3 (1923), 4 (1924), 5, 6 (both 1928). Displacement: 615 tons. 235' x 26' 4" x 7' 6". Coal-fired reciprocating engines, 4,000 HP. 20 kts. Armament: 2 4.7", 1 3" AA, 2 DCT.

AUXILIARY MINESWEEPERS

A large number of ex-trawlers and whalers are currently serving in the Japanese navy as auxiliary minesweepers.

RIVER GUNBOATS

KARATU (ex-*Luzon*, 1927). Former U. S. gunboat (*PR-7*) sunk off Corregidor and salvaged by Japanese. Displacement: 560 tons. 210' 9" x 31' x 6' 6". Reciprocating engines, 3,150 HP. 16 kts. Probably rearmed.

TATARA (ex-*Wake*, ex-*Guam*, 1927). Former U. S. gunboat (*PR-3*) captured by Japanese at Guam. Displacement: 370 tons. 159' 6" x 27' x 5' 3". Reciprocating engines, 1,950 HP. 14.5 kts. Probably rearmed.

SUMA (also reported as *Hui Mo*, ex-*Moth*, 1915). British gunboat sunk at Hongkong, salvaged by Japanese. Belongs to British Insect class.

HUSIMI, SUMIDA (both 1939). Displacement: 320 tons. 164' x 32' x 3' 6". Reciprocating engines, 2,200 HP. 16.5 kts. Armament: 1 3" AA.

ATAMI, HUTAMI (both 1929). Displacement: 170 tons. 148' 8" x 20' 8" x 3'. 1,200 HP. 16 kts. Armament: 1 3" AA, 6 MG.

Seta Class: SETA (1922); HIRA, HODU, KATADA (all 1923). 305 tons. 180' x 27' x 3' 4". Mixed-firing reciprocating engines, 2,100 HP. 16 kts. Armament: 2 3" AA, 6 MG.

TOBA (1911). 211 tons. 180' x 27' x 2' 8". 1,400 HP. 15 kts. Armament: 2 3" AA, 6 MG.

TARGET SHIP

SETTU. Disarmed old battleship.

REPAIR SHIPS

A large repair ship, particulars unknown, appears to have been built following completion of the *Akasi*.

AKASI (1938). Standard Displacement: 9,000 tons. 500' x 67' 3" x 18' 8". Geared turbines, 10,000 SHP. 19 kts. Armament: 4 5" AA, numerous MG. Largest vessel ever built at Sasebo, one of Japan's main navy yards, and first built for the purpose Japanese repair ship.

ASAHI (1899). Ex-battleship. Standard Displacement: 11,440 tons. 425' 3" x 75' 3" x 27' 3". 18 kts. No armament.

SUBMARINE TENDERS

A good number—ten or more—of merchant ships have been taken over and converted for service as submarine tenders.

Turuguzaki (1935) and *Takasaki* (1936), 12,000-ton vessels frequently listed as submarine tenders bear names which are variants of names borne by vessels now serving as auxiliary aircraft carriers (*Turuginuzaki* and *Takesago*). These probably, though not certainly, refer to the same ships.

KASINO, SOYA, TUGARU (all 1940). Reports that these three vessels are combination aircraft carriers and light cruisers of a novel type are dubious. *Tugaru*, however, has also been described as a minelayer, *Kasino* as a storeship and *Soya* as a surveying vessel. No particulars are available.

TAIGEI (1933). Standard Displacement: 10,000 tons. 689' x 59' x 17'. Diesels, 13,000 SHP. 20 kts. Armament: 4 5" AA, numerous smaller and MG. Planes: 3. Catapults: 2. May be mothership to midget submarines.

ZINGEI (1923), TYOGEI (1924). Displacement: 5,160 tons. 380' x 53' x 19' 6". Two screws, geared turbines, 7,000 SHP. 16 kts. Armament: 4 5.5", 2 3" AA, 2 MG. Carry one seaplane each.

KOMAHASHI (1913). 1,125 tons. 227' x 35' x 17' 9". 1,200 HP. 13 kts. Armament: 2 3", 1 3" AA.

OILERS

Before the war, Japan had an excellent, up-to-date tanker fleet. Among these modern tankers, some or all of which are currently serving the navy, are *Akebono Maru*, *Fujisan Maru*, *Kaisyo Maru*, *Kokuyo Maru*, *Nissin Maru*, *Omurosan Maru*, *San Diego Maru*, *San Pedro Maru*, *Toa Maru* and *Tonan Maru*.

Siretoko Class: ERIMO, SATA, SIRETOKO (all 1920); SIRIYA, TURUMI (also reported as *Turimi*) (both 1921); HAYATOMO, IRO, ONDO (all 1922); NARUTO (1923). 8,000 tons gross. 470' 8" x 58' x 26' 6". Reciprocating engines, 5,850 HP. 12 kts. Armament: 2 5.5", 2 3" AA. Cargo capacity: 8,999 tons.

STORESHIPS

Kasino, listed as submarine tender, may be storeship.

IRAKO, KASHI MARU. No particulars available.

MAMIYA (1923). Displacement: 15,820 tons. 475' x 61' x 28'. Reciprocating engines, 10,000 HP. 14 kts. Armament: 2 5.5", 2 3" AA.

MUROTO (1918), NOZIMA (1919). Ex-coasters. Displacement: 8,215 tons. 345' x 50' x 23' 9". 2,500 HP. 12.5 kts. Armament: 2 4.7".

SALVAGE SHIPS

A number of salvage ships have been built within the past five years. No names reported.

HOSPITAL SHIPS

The names of ten Japanese hospital ships have been reported as follows (some may have been changed): *America Maru*, *Asari Maru*, *Baikal Maru*, *Hikawa Maru*, *Hokusan Maru*, *Kyuko Maru*, *Manila Maru*, *Seattle Maru*, *Takesago Maru* (same name is borne by an auxiliary aircraft carrier or submarine tender) and *Ural Maru*.

SURVEYING VESSELS

KOSHU, SOYA, TUKUSI. No particulars reported. *Soya* is also described as a submarine tender.

CABLE LAYING SHIPS

HASIMA, ODATE, TATEISI, TURUSIMA. No particulars available.

ICEBREAKERS

OTOMARI (1921). 2,330 tons. 200' x 50' x 18' 6". Reciprocating engines, 4,000 HP. 13 kts. Armament: 1 3".

DISARMED BATTLESHIPS

SIKISIMA (1898). 11,275 tons.

HUZI (1896). 9,179 tons.

JAPAN - AIRCRAFT CARRIERS— COMBATANT TYPE

Owing to extremely heavy "flat top" losses, both of fleet and auxiliary types, it is possible that Japan has converted several of the warships under construction at the time of Pearl Harbor into aircraft carriers. It may be, for example, that one or more of the 40,000-ton Nissin class battleships have been so converted, or one of the 15,000-ton Titibu oversize cruisers. There have even been reports that a group of "submarine tenders" launched in 1941—the *Kasino*, *Soya* and *Tugaru*—are a novel type of combination light cruiser and small carrier. While any or all of these reports may be true, there is no specific evidence to support them other than a Japanese propaganda agency report that four carriers were launched in 1942, which, if true, may refer in whole or part to auxiliary carriers. None of the ships in question has yet put in an appearance. Hence none of the above vessels is listed among aircraft carriers, but all are to be found under their original categories. It should occasion no surprise, however, if they are indeed aircraft carriers.

3 Syoho Class (?)

One of the Japanese carriers which took part in the Battle of the Coral Sea seems to have been of a previously unreported type. There is some possibility that she belongs to the Syoho class, a group which appears to consist of three vessels as large or larger than the Syokakus. The Syohos may, however, prove to be auxiliary carriers.

3 or 4 Syokaku Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|----------|-----------|----------|-------|
| SYOKAKU | Yokosuka | 12/ 7/37 | 6/ 2/39 | 1941 |
| ZUIKAKU | Kawasaki | 1938 | 11/27/39 | 1941 |
| RYUKAKU | | 1938 | 1940 | 1942 |
| 1 Ship | | 1941 | | |

Standard Displacement: 17,000 tons (possibly larger). Dimensions: Length, 800'; others unreported.

Propulsion: Geared turbines. Speed: 30 kts.

Plane Capacity: About 60 planes. Armament: 12 5" DP. Other details unreported.

The Japanese aircraft carrier sunk by U. S. planes in the Battle of the Coral Sea has been identified as the *Ryukaku*, but it may have been a vessel of the Syoho type (see Japanese Escort Carriers). The *Syokaku* herself and the *Zuikaku* were severely damaged in the last action of the same battle, and were hit again in October, 1942, in the Solomons. Although neither has been seen since, the U. S. Navy has not claimed their sinking.

1 Koryu Class (?)

| Name | Builder | Keel Laid | Launched | Comp. |
|-------|---------|-----------|----------|-------|
| KORYU | Kure | 1937 | 9/39 | 1941 |

Standard Displacement: 10,050 tons. Dimensions: 688' 6" x 68' 4" x 16' 6".

Propulsion: Four screws, four sets geared turbines, 60,000 SHP. Speed: 30 kts.

Plane Capacity: 40 planes. Armament: 12 5" DP; 24 smaller. Other details unreported.

The existence of the *Koryu* is a question mark. The data above assume that she is, as generally believed, the third and sole surviving member of the *Hiryu* class, the other two vessels of which, the *Hiryu* and *Soryu*, were sunk in the Battle of Midway. The *Koryu*, however, has never been met in action. It is also possible that she is actually the *Ryukaku* (Japanese characters for the two names are similar).

1 Ryuzyo Class

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|----------|-----------|----------|---------|
| RYUZYU | Yokohama | 11/26/29 | 4/ 2/31 | 5/ 9/33 |



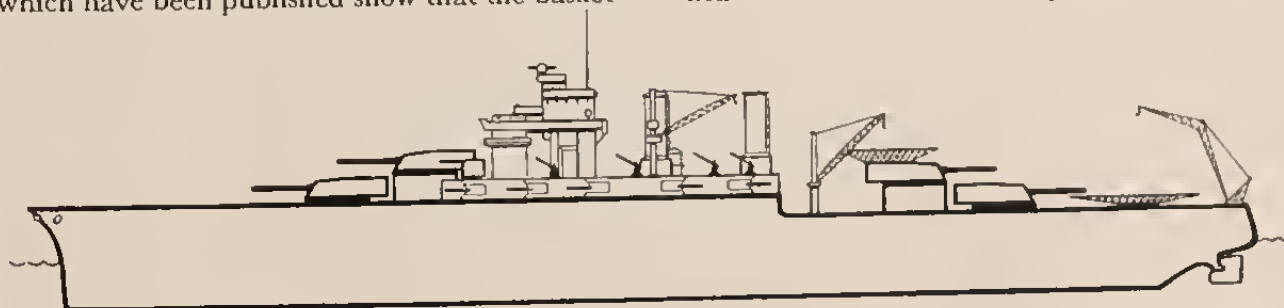
Official U. S. Navy Photo

WEST VIRGINIA Battleship Maryland Class

Badly crippled in the attack on Pearl Harbor (see U. S. battleship Arizona). Believed to have rejoined the fleet in 1943 after extensive changes in anti-aircraft armament and possibly the installation of improved machinery which may make her capable of greater speed. Pictures which have been published show that the basket

masts have been removed.

On the morning of Sunday, December 7, 1941, the main battle line of the Pacific Fleet was lying at anchor in Pearl Harbor. A young Army man who was interested in sound-detection equipment was using it unofficially. He thought he heard unusual sounds and reported the fact to a

**WEST VIRGINIA**

| Ship | Launched | Commissioned | Builder |
|--|---|---|---|
| WEST VIRGINIA (flagship) No. BB48 | Nov. 19, 1921 | Dec. 1, 1923 | Newport News S. B. Co. |
| Displ. 31,800 Lgth. 624' 0" Beam 97' 6" Draft 29' 11" | Compl. 1,407 S.H.P. 27,300 Speed 21.0 | Mach. 8 B & W boilers; G.E. turbo-electric drive; 4 screws Armor 14" belt 16" conning tower 18" turret 3" deck | Arm't. eight 16"/45 twelve 5"/51 eight 5"/25 AA four 5.7 MM. eleven 40 MM. Aircraft three; 2 catapults |

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Standard Displacement: 7,100 tons. Dimensions: 548' x 60' 6" x 15' 4".
 Propulsion: Two screws, two sets geared turbines, 43,000 SHP. Speed: 25 kts.
 Plane Capacity: 32. Armament: 12 S" AA; 24 smaller AA. Other details unreported.

The *Ryuzyo* (or *Ryuja*) is one of Japan's older carriers. Her plane capacity is generally reported to be 25; however, the first Dutch Harbor raiders came from the *Ryuzyo* and they numbered at least 30 (most of which never got back, for they were unable to find the *Ryuzyo* in the same fog which prevented our bombers from locating her). American planes finally hit and damaged the *Ryuzyo* five months later (October, 1942) in the Solomons. She has not been seen since.

1 Hosyo Class (?)

Photo Page 188

| Name | Builder | Keel Laid | Launched | Comp. |
|-------|---------------|-----------|----------|----------|
| HOSYO | Asano, Turumi | 12/16/19 | 11/13/21 | 12/27/22 |

Standard Displacement: 7,470 tons. Dimensions: 540' x 62' x 20' 3".

Propulsion: Two screws, two sets geared turbines, 30,000 SHP. Speed: 25 kts.

Plane Capacity: 36. Armament: 4 S.S"; 2 3" AA; several smaller, as of 1939. Other details unreported.

American forces may have sunk a second Japanese carrier in the Coral Sea, and it may have been the *Hosyo*. On the other hand, it is barely possible that the *Hosyo* was the second Japanese carrier in the Dutch Harbor raid. The *Hosyo* was Japan's first built-for-the-purpose carrier, and one of the first such in the world. Like so many Japanese "flat tops", it has no island superstructure, smoke being carried outward in flat-folding vents (as in the late seaplane tender *U. S. S. Langley*). The *Hosyo* was to have had a sister, the *Syokaku*, abandoned in accordance with the Washington treaty. The name was later applied to the above-listed modern class of *Syokakus*. The *Hosyo* was completely refitted just before Pearl Harbor.

JAPAN - AIRCRAFT CARRIERS— ESCORT TYPE

Japan has made extensive use of escort carriers—converted merchantmen—particularly in operations where only light opposition is to be expected. Such carriers were conspicuously active during the first six months of the war in the Pacific, when the American fleet, owing to the disaster at Pearl Harbor, was not a daily threat. (These Japanese escort carriers are not to be confused with seaplane carriers, which the Japanese also employ and which are listed among auxiliaries.) Among the most important types of Japanese escort carriers, which are frequently much larger than equivalent American and British types, are the *Yawata* class of 17,000-ton-gross former passenger liners (*Usiyo* or *ex-Tawata Maru*, *Otaka* or *ex-Kasuga Maru* and a third vessel); the *Kasiwara Maru* (possibly now *Hayataka*) and *Izumo Maru* (now *Hitaka*), another pair of ex-passenger liners of 27,000 tons; and perhaps the *Syoho* (*Turugizaki Maru*), *Zuiha* (*Takasago Maru*) and a third ship, of not more than 20,000 tons each. Two of the *Yawatas* have been sunk, one by a U. S. submarine and the other identified as the *Nitta Maru* by Admiral Halsey's dive bombers at Kwajalein atoll in the Gilbert and Marshall raid, January-February, 1942. Another possible type of Japanese escort carrier, one of which has been called the *Hoyatoka Maru*—though perhaps in error—was probably the second Japanese carrier participating in the attack on Dutch Harbor. This same ex-freighter has also been referred to as the *Hiya Maru*.

JAPAN - AIRCRAFT AUXILIARIES

SEAPLANE CARRIERS

Several seaplane carriers are believed building.

TITOSE (1936), TIYODA (1937), MIDUHO (1938), NISSIN (1939), AKITUSIMA (launch date unreported). Standard Displacement: 9,000 tons. 577' 6" x 61' 8" x 19'. Geared turbines, 15,000 SHP. 20 kts. (except *Miduho*, 9,000 SHP, 17 kts.) Armament: 6 5" AA in pairs, num-

erous smaller AA. Planes: 20. Catapults: 4. The seaplane carrier, launching vessel for small seaplanes, such as the float-type Zero fighter, is a type of vessel not employed in any other major navy. *Miduho* has probably been lost. Name *Nissin* is also reported for a 40,000-ton battleship.

KAMO1 (1922). Ex-tanker. Standard Displacement: 17,000 tons. 490' w.l. x 67' x 27' 8". Coal-fired turbines, electric drive, 8,000 SHP. 15 kts. Armament: 2 S.5", 2 3" AA. Planes: 16 (max.), 10 (normal). First Japanese naval vessel with electric drive.

NOTORO (1920). Ex-tanker. Standard Displacement: 14,050 tons. 470' 9" x 58' x 26' 6". Reciprocating engines, 5,850 HP. 12 kts. Armament: 2 4.7", 2 3" AA. Planes: 16 (max.), 8 (normal). Either *Notoro* or *Kamoi* has been sunk.

SEAPLANE TENDERS

Japanese seaplane tenders are essentially small seaplane carriers. They mother small float-planes. By contrast, U. S. seaplane tenders are repair and fuel ships for large flying boats. Many others, besides those listed, are in service. Several have been sunk.

FUJIKAWA MARU, KAMAKURA MARU, KENYO MARU. Particulars wanting.

KINAGAWA MARU (1938). 6,937 tons gross. 436' 4" x 58' 6" (draft unreported). Diesels, 14,500 HP. 17 kts. 2 3" AA. Planes: 12.

KAMIKAWA MARU (1937), KIYOKAWA MARU (launch date unreported). 6,850 tons gross. 479' 4" x 62' 3" x 27' 6". Otherwise as *Kinagawa Maru*.

KAGU MARU (1936). 6,800 tons gross. 453' 3" x 61' x 27' 6". Otherwise as *Kinagowo Maru*.

KINUGASA MARU (1936). 6,800 tons gross. 453' 6" x 60' 9" x 27' 3". Otherwise as *Kinagawa Maru*.

SMALLER ALLIED NAVIES

BELGIUM

Belgian seamen man the two Flower type corvettes of the Belgian Section of the British Royal Navy.

ARTEVELDE (Antwerp, 1939). Fishery protection vessel. 1,600 tons. 328' x 33' 6" x 10' 9". Two screws, geared turbines, 30,000 SHP. 30 kts. Armament: 4 4.1", 2 40 mm AA, 30 depth charges; also fitted for minelaying (stowage for 120 mines) and sweeping. To have been employed also as royal yacht. May have been destroyed during German invasion, 1940.

MERCATOR (Leith, 1931). Sail training vessel. 1,200 tons. 190' 6" x 34' 10" x 4'. Auxiliary Diesel, 500 HP. 11 kts.

WESTDIEP, WIELINGEN (1915). Patrol vessels, ex-German torpedo boats of World War I "A" type. 230 tons. No armament. May still exist.

ZINNIA (1915). Fishery protection vessel. Ex-British World War I Flower class type sloop, purchased 1920. 1,200 tons. 262' 6" x 33' x 11'. Single screw, coal-fired reciprocating engines, 1,400 HP. 16 kts. 1 MG AA. Possibly destroyed, 1940.

BRAZIL

BATTLESHIPS

MINAS GERAIS (9/10/08), SAO PAULO (4/19/09). Built by Armstrong and Vickers respectively. Standard Displacement: 19,200 tons. Dimensions: 541' x 83' x 25' max. Two screws, reciprocating engines, 30,000 SHP. Speed: 21 kts. Armament: 12 12"/45 in twin turrets, 14 4.7"/50, 4 3" AA, 4 40 mm AA, 8 MG. Armor: 4" 9" belt, 8" 9" turrets, 12" fore conning tower, 9" after conning tower. Converted to oil and otherwise modernized, *Minas Gerais*, 1934-39, and *Sao Paulo*, 1937-43.

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CRUISERS

BAIA, RIO GRANDE DO SUL (both 1909). Built by Armstrong, engined by Vickers. Standard Displacement: 3,150 tons. Dimensions: 410' 6" x 39' x 13' 7.5". Three screws, geared turbines, 22,000 SHP. Speed: 27 kts. Armament: 10 4.7"/50, 4 3" AA, 4 3-pounder (saluting), 4 21" TT in pairs. Armor: 1.5" deck, 3" conning tower. Refitted in Brazil, 1925-26.

DESTROYERS

ACRE, AJURICA8A, AMAZONAS, APA, ARAGUARY, ARAGUAYA. All laid down at Rio de Janeiro in 1940, but none launched up to end of 1943. Of British H class design, similar to Brazilian destroyers laid down in England before war and taken over by Royal Navy after September, 1939. Standard Displacement: 1,340 tons. 323' x 33' x 8' 6". Two screws, geared turbines, 34,000 SHP. Speed: 35.5 kts. Armament: 4 4.7", 7 smaller, 8 21" TT in quadruple mounts.

MARCILIO DIAZ (1940), MARIZ E BARROS (1940), GREENHALGH (1941). Built at Rio de Janeiro to U. S. Mahan class designs. Material imported from U. S. Standard Displacement: 1,500 tons. 357' x 34' 10" x 9' 10". High pressure, high temperature geared turbines, 42,800 SHP. Speed: 36.5 kts. Armament: 5 5"/38 DP, 4 MG, 12 21" TT in quadruple mounts.

MARANHAO (ex-*Porpoise*, 1913). Former Royal Navy vessel, purchased by Brazil. Standard Displacement: 934 tons. 265' 3" x 26' 6" x 9' 3". Geared turbines, 22,500 SHP. Speed: 28 kts. Armament: 3 4", 1 2-pounder, 4 21" TT in pairs.

TORPEDO BOATS

MATO GROSSO (1908), PIAUHY (1908), RIO GRANDE DO NORTE (1909), PARAHYBA (1909), SANTA CATARINA (1909), SERGIPE (1910). Standard Displacement: 560 tons. 240' x 23' 6" x 7' 10" max. Coal-fired reciprocating engines, 8,000 HP. Designed speed (no longer attained): 27 kts. Armament: 2 4", 4 3-pounder, 2 18" TT. Four other vessels of this type, *Alagoas*, *Amazonas*, *Para* and *Parana*, have been scrapped.

ANTI-SUBMARINE CRAFT

GUAPORE, GURUPI, JAGUARAO, JAGUARIBE, JAVARI, JURUA, JURUENA, JUTAI. Transferred to Brazil by U. S. in 1942 under lend-lease. Of standard U. S. 173' PC type. For particulars, see United States. Previous designations unreported.

Eight sub-chasers of standard U. S. 110' type, transferred to Brazil in 1942-3. Names unreported.

SUBMARINES

TIM8YRA (ex-*Gondar*, 1936), TUPY (ex-*Neghelli*, 1936), TAMOYO (ex-*Ascianghi*, 1937). Originally laid down for Italian navy, purchased by Brazil in 1937. Resemble *Perla* type. Displacement: 615 tons, surface; 853, submerged. 197' 6" x 21' x 13'. Diesels, 1,350 HP, and electric motors, 800. 14 kts., surface; 7.5, submerged. 6 21" TT, 1 3.9", 2 13 mm AA.

HUMAYTA (Built by Ansaldo, 1927). Displacement: 1,450 tons, surface; 1,884, submerged. 284' 6" x 25' 6" x 14'. Diesels, 4,900 HP, and electric motors, 2,200. 18.5 kts., surface; 10, submerged. 6 21" TT (four bow, two stern), 1 4.7"/45, 4 13 mm AA. Resemble Italian *Balilla* type.

AUXILIARIES AND SPECIAL TYPES

MINELAYERS

CANANEA, CARIOCA (both 1938); CA8EDEL0, CAMAQUAN, CAMOCIM, CARAVELAS (all 1939). Built at Rio de Janeiro. Standard Displacement: 552 tons. 188' 8" x 25' 6" x 8'. Reciprocating engines (British-built), 2,200 HP. 14 kts. Armament: 2 4", 4 MG AA; stowage for 50 mines.

ITAPEMERIM (ex-*Maria do Couto*). Full load displacement: 340 tons. 116' x 21' x 12'. Armament: 2 3-pounder; stowage for 30 mines.

ITACURUSSA (1901). Full load displacement: 210 tons. 102' 4" x 19' 6" x 10' 4" max. Coal-fired reciprocating engine, 110 HP. 10 kts. 1 37 mm.

TRAWLERS

BARRETO MENEZES, FERNANDES VIEIRA, FILIPE CAMARAO, HENRIQUE DIAS, MATIAS DE ALBUQUERQUE, VIDAL DE NEGREIROS (all 1942). Laid down at Rio de Janeiro to British order in 1941; transferred to Brazil in 1942. Particulars wanting, but from original names (*Pampano*, *Papaterro*, *Parati*, *Pargo*, *Paru* and *Pelegime*, though not in that order) appear to resemble British Bonito group of trawlers.

RIVER MONITORS

PARAGUA5SU (ex-*Victoria*, 1938). Built at Rio de Janeiro. 430 tons. 146' 4" x 34' 9" x 5'. Reciprocating engines, 1,100 HP. 13 kts. Armament: 1 4.7", 2 3.4" howitzers, 3 47 mm, 4 MG.

PARNAHY8A (1937). Built at Rio de Janeiro. 620 tons. 180' 6" x 33' 6" x 5' max. Two screws, reciprocating engines, 1,300 HP. 12 kts. Armament: 1 6", 2 3.4" howitzers, 2 47 mm, 4 MG. Armor: 3" side and partial deck.

PERNAM8UCO (1905). Built at Rio de Janeiro. 470 tons. 146' x 24' x 5' 3". Two screws, coal-fired reciprocating engines, 800 HP. 11 kts. Armament: 2 4.7", 2 3-pounder. Armor: 4"-6.6" belt, 4" deck, 3.5" conning tower, 6" turret.

OTHER VESSELS

ALMIRANTE SALDANHA (1933). Sail training vessel, built in England. 3,325 tons. 307' 3" x 52' x 18' 3". Auxiliary Diesel, 1,400 HP. 11 kts. Armament (for instructional purposes): 4 4", 1 3" AA. 4 3-pounder, 1 13 mm AA, 2 MG, 1 21" TT; also fitted with minelaying gear.

AMAPA. River gunboat. 290 tons. 104' x 24' x 10' 6". 15 kts. 2 57 mm, 6 MG.

ANNI8AL MENDONCA (ex-*Times*, ex-*St. Keyne*, 1919). Sea-going tug. 820 tons. 135' x 30' x 14' 6". 1,200 HP. 10 kts. 2 3-pounder. Of British Saint type.

8ELMONTE (ex-*Valesia*, 1912). Repair ship, former German merchantman. 5,227 tons gross. 364' 9" x 51' x 15'. 2,700 HP. 12 kts. Armament: 4 4.7", 2 6-pounder.

CEARA (Spezia, 1915). Submarine tender. Contains built-in drydock for submarines. Displacement varies from 4,100 tons with dock gate closed and dock empty to 6,460 tons with submarine in dock undergoing hydraulic pressure test. 328' p.p. x 52' x 14'-20' 6". Diesels, 4,100 HP. 14 kts. Armament: 4 4", 2 smaller.

HEITOR PERDIGAO (1921). Sea-going tug. 500 tons. 132' x 26' x 15'. 850 HP. 11 kts. 2 3-pounder. Sister, *Muniz Freire*.

IGUAPE (ex-*Salles de Carvalho*), ITAJAHY (ex-*Rio Pardo*) (both 1908). Minesweepers, German-built. 150 tons. 85' x 19' x 9'. 350 HP. 10 kts. 1 47 mm, 2 MG.

JACEGUAY (ex-*Flecha*, ex-*Fairfield*, 1919). Surveying vessel, former British minesweeper. 710 tons. 231' x 28' 6" x 7' 6". Coal-fired, reciprocating engines, 2,200 HP. 16 kts. No armament reported.

JOSE 8ONIFACIO (ex-*Itopema*, 1909). British-built, surveying vessel. 1,300 tons. 270' x 42' x 14'. 540 HP. 9 kts. Armament: 2 4", 2 6-pounder. Sister, *Vital de Oliveira*.

LAHMEYER (ex-*Tenente Lohmeyer*), MARIO ALVES. Lighthouse tenders. 280 tons. 116' 3" x 22' 9" x 11'. 2 MG.

LAURINDO PITTA (1910). Sea-going tug. 514 tons. 130' x 26' x 15'. Two screws, reciprocating engines, 850 HP. 11 kts.

MARAJ0 (ex-*Malistan*, Britain, 1924). Oiler. 7,930 tons. 400' x 52' 3" x 25' 3". Reciprocating engines, 3,100 HP. 10 kts.

MUNIZ FREIRE (1921). Sea-going tug. Sister of *Heitar Perdigoo*.

NOVAES DE A8REU (Rotterdam, 1918). Oiler. 500 tons. 140' x 23' x 12'. 400 HP. 10 kts.

OYAPOCK (ex-*Amapo*, Britain, 1907). River gunboat. 195 tons. 137' x 18' x 6'. Two screws, coal-fired reciprocating engines, 450 HP. 14 kts. Armament: 2 3-pounder, 2 MG.

POTENGI (1938). Oiler. 600 tons. 178' 9" x 24' 6" x 6'. Two screws, Diesels, 550 HP. 10 kts.

RIO BRANCO (ex-*Margaret*, 1914). Former Canadian government vessel, employed as survey vessel. 896 tons. 200' x 32' x 10'. Coal-fired reciprocating engines, 2,000 HP. 15 kts. Armament: 2 6-pounders.

VITAL DE OLIVEIRA (ex-*Itouba*, 1910). Survey vessel. Sister of *asé Bonifacio*.



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CHINA

RIVER GUNBOATS

The Chinese government operates several river patrol vessels in addition to those listed here; particulars unavailable. New names of the American and British gift vessels have not been reported.

SANDPIPER (1933). Gift of Great Britain. 185 tons. 160' x 30' 8" x 2'. Two screws, reciprocating engines, 600 HP. 11.25 kts. 1 3.7" howitzer, several smaller.

FALCON (1931). Gift of Great Britain. 372 tons. 150' x 28' 8" x 5'. Geared turbines, 2,250 SHP. 15 kts. 1 3.7" howitzer, 2 6-pounder, several MG.

GANNET (1927). Gift of Great Britain. 310 tons. 184' 8" x 29' x 3' 2.5". Geared turbines, 2,250 SHP. 16 kts. 2 3" AA, several MG.

TUTUILA (1927). Gift of United States. 370 tons. 159' 6" x 27' x 5' 6". Reciprocating engines, 1,950 HP. 14.5 kts. 2 3"/23, several MG. Sister of captured *Wake* (now Japanese *Koratu*).

COLOMBIA

DESTROYERS

ANTICOUIA (ex-*Doura*, 1932), CALDAS (ex-*Tejo*, 1933). Built at Lisbon to British designs; acquired, 1934. Fitted for minelaying. Similar to Portuguese *Lima*.

GUNBOATS

BOGOTA (ex-*Partenope*, ex-*Hornum*, ex-*M-140*), CORDOBA (ex-*Dinard*, ex-*Grille*, ex-*M-158*) (1919). Former German minesweepers. 360 tons. 192' x 24' 3" x 7' 3". Two screws, coal-fired reciprocating engines, 1,850 HP. 16 kts. 1 3.5", 2 3", 2 MG.

MARISCAL SUCRE (ex-*Flying Fox*, ex-*Winchester*, 1909). Former British yacht. 125 tons. 165' x 15' 6" x 4'. Three screws, geared turbines, 2,500 HP. Armament: 2 3", 1 MG.

RIVER GUNBOATS

BARRANQUILLA, CARTAGENA, SANTA MARTA (all 1930). Built in England; crossed Atlantic under own power. 142 tons. 137' 9" x 23' 6" x 2' 9" max. Two tunnel screws, semi-Diesels, 600 HP. 15.5 kts. 1 3", 4 MG.

PRESIDENTE MOSQUERA. 200 tons. 150' x 35' x 3' 6". Stern wheel. 2 37 mm.

A (ex-*LM-15*), B (ex-*LM-17*), C (ex-*LM-19*), D (ex-*LM-20*) (1918). Former German vessels, acquired 1933. 12 tons. 57' 6" x 8' 9" x 2' 9". Gasoline motors, 900 HP. 28 kts. 2 MG.

Nos. 1-4 (1913). Built in England. 20 tons. 80' x 12' 6" x 3' 6". Gasoline motors, 160 HP. 12 kts. 1 1-pounder.

OTHER VESSELS

CARABOBO (1925). Coastguard patrol vessel, built in France. 120 tons. 100' x 20' x 8' 6". Reciprocating engines. 13 kts. 1 3", 2 MG. Sisters, *Junin* and *Pichincha*.

CUCUTA (ex-*Commercial Traveller*, ex-*Crofton Hall*, Glasgow, 1913). Training vessel. 5,378 tons gross. 405' x 52' x 26' 4". Reciprocating engines, 3,000 HP. 10 kts. No armament.

JUNIN (1925). Coastguard patrol vessel. Sister of *Carabobo*.

MOSQUERA (ex-*Royal Highlander*, ex-*Royal Scot*, 1910). Transport, acquired 1933. 3,500 tons. Reciprocating engines. Armament: 2 3.5".

PICHINCHA (1925). Coastguard patrol vessel. Sister of *Carabobo*.

COSTA RICA

ex-MONSOON. Former yacht, acquired 1941. 22 tons gross. 48' 6" x 11' 3" (draft unreported). 15 kts.

CUBA

Cuba has made plans to acquire a 4,000-ton cruiser, four 2,000-ton sloops, six gunboats of nearly 1,000 tons and a number of MTBs, presumably from the United States. The program was blocked by the outbreak of war, however, and it is likely to be abandoned altogether afterward.

OLD SCOUT CRUISERS

CUBA (Cramp, 8/10/11). Standard Displacement: 2,055 tons. 260' p.p. x 39' x 14'. Coal-fired reciprocating engines, 6,000 HP. 18 kts. Armament: 2 4", 6 3", 4 6-pounder, 4 3-pounder, 2 MG.

PATRIA (Cramp, 8/10/11). Standard Displacement: 1,200 tons. 200' p.p. x 36' x 13'. Coal-fired reciprocating engines, 4,000 HP. 16 kts. Armament: 2 3", 4 6-pounder, 4 3-pounder. Employed as training ship.

GUNBOATS

HABANA, PINAR DEL RIO (1912). Wood. Built at Havana. 80 tons. 100' x 18' x 6'. Single screw, coal-fired, 200 HP. 12 kts. 1 1-pounder.

DIEZ DE OCTUBRE, VEINTE Y CUATRO DE FEBRERO (both built in England, 1911). 218 tons. 110' x 20' x 8'. Coal-fired. 12 kts. Armament: 3 3-pounder.

BAIRE (Danzig, 1906). 500 tons. 196' x 23' x 9'. Coal-fired, 1,200 HP. 14 kts. Armament: 4 3", 2 3-pounders. Employed as presidential yacht.

COAST GUARD PATROL VESSELS

Twelve U. S. Coast Guard cutters of 83-foot type were transferred to Cuba in March, 1943. For particulars, see the United States. New names unreported.

CAPITAN FERNANDEZ OUEVEDO (Havana, 1932). 115 tons. Diesels. 12 kts. Armament: 1 3" AA, 2 1-pounder.

MATANZAS, VILLAS (both 1912). Specifications identical with *Habana*, although differ in appearance.

ENRIQUE VILLUENDAS (Chester, Pa., 1899). 178 tons. 132' x 20' x 9'. Coal-fired, 600 HP. 16 kts. 2 3-pounder.

YARA (Britain, 1895). 449 tons. 155' x 26' x 13'. Coal-fired, 600 HP. 12 kts. 2 6-pounder, 2 3-pounder.

VEINTE DE MAYO (Glasgow, 1895). 203 tons. 141' x 18' 6" x 10' 6". Coal-fired, 500 HP. 12 kts. 2 3-pounder, 2 1-pounder.

GENERAL ZAGAS. 500 tons. 2 1-pounder.

TRANSPORTS

LIBERTAD (ex-*Recca*, 1921). 5,441 tons gross.

CARIBE (ex-*Koura*, ex-*Mimis*, ex-*Agios Vlasios*, ex-*Budapest*, ex-*Terenyi*, 1907). 3,335 tons gross.

DOMINICAN REPUBLIC

Nos. 1-3 (ex-*GG-110*, 144, 302) (1924). Purchased from U. S. Coast Guard in 1938. Wood. 37 tons. 75' x 13' 9" x 4'. Gasoline motor, 400 HP. 13.5 kts. 1 1-pounder.

GREECE

CRUISER

AVEROF (Orlando, Italy, 1910). Standard Displacement: 9,450 tons. Dimensions: 462' x 69' x 24' 8" max. Two screws, coal-fired reciprocating engines, 19,000 HP. Speed: 22.5 kts. Armament: 4 9.2"/45 and 8 7.5"/45 in twin turrets, 16 3" (14-pounder), 2 3" AA, 2 MG. Armor: 3.2S"-8" belt, 2" deck, 6.5" turrets, 8" main barbettes. Refitted in France, 1925-27.

DESTROYERS

COUNDOURIOTIS (1931), SPETSAI (1932). Built at Genoa. Standard Displacement: 1,389 tons. 303' x 32' x 12' 6" max. Geared turbines, 40,000 SHP. Speed: 38 kts. Armament: 3 4.7", 1 3" AA, 3 40 mm AA, 3 21" TT in triple mount, 4 DCT; also fitted to carry 4S mines. Resemble Italian Dardo class.

AETOS (ex-San Luis), IERAX (ex-Santa Fé), PANTHER (ex-Santiago) (all built 1911 in England). Laid down for Argentina and purchased by Greece in 1912. Standard Displacement: 1,050 tons. 293' x 27' 9" x 8' 6". Geared turbines, 19,750 SHP. Speed: 32 kts. Armament: 3 4", 1 3" AA, 2 2-pounder, 3 21" TT in triple mounts, 4 DCT; also fitted to carry 40 mines.

TORPEDO BOATS

SPHENDONI (1907). Built in Britain. 305 tons. 220' 3" x 20' 6" x 6'. Coal-fired. 29 kts. 2 3.5", 1 2.7" AA, 2 18" TT.

NIKI (1905), ASPIS (1906). Built at Stettin. 275 tons. 220' 3" x 20' 6" x 6'. Coal-fired, 6,700 HP. 29 kts. 2 3.5", 1 2.7" AA, 2 18" TT.

ANTI-SUBMARINE CRAFT

U. S.-built Destroyer Escort

VASILEVS GEORGIOS I (1943). U.S.-built vessel of one of standard American DE types, lend-leased to Greece and named for a Greek destroyer lost in 1941.

British-built, Type Uncertain

VASILISSA OLGA. In 1943 it was announced that a destroyer or escort destroyer—probably the latter—of British construction would be given to Greece, in addition to the vessels named below, to replace and carry the name of the *Vasilissa Olga*, lost in the fall of 1943.

British-built Hunt Type

ADRIAS (ex-Border), KANARIS (ex-Hatherleigh), MIAOULIS (ex-Modbury), NEAR-CHOS, PINDOS (ex-Bolebrooke), THEMISTOCLES (launch dates unreported). British Hunt type vessels, *Pindos* transferred in 1942 and others at later dates. Previous names, if any, of *Themistocles* and *Nearchos* unreported.

British-built Corvettes

APOSTOLIS, KRIEZIS, SACHTOURIS (ex-Peony), TOMBAZIS. Flower-type corvettes.

SUBMARINES

NEREUS (Nantes, France, 1927). Displacement: 718 tons, surface; 960, submerged. 22S' p.p. x 18' 10" x 13' 8". Diesels, 1,420 HP, and electric motors, 1,200. 14 kts., surface; 9.5, submerged. 8 21" TT (six bow, two stern), 1 3.9", 1 3-pounder AA.

PAPANICOLIS (Nantes, France, 1926). Displacement: 59S tons, surface; 778, submerged. 204' 6" p.p. x 17' 6" x 11'. Diesels, 1,300 HP, and electric motors, 1,000. 14 kts., surface; 9.5, submerged. 6 21" TT (two internal bow, two external bow and two external stern), 1 3.9", 1 3-pounder AA.

OTHER VESSELS

ARGO (ex-Solna, ex-Granlund, ex-Corbis, ex-War Ranee, 1918). Oilier. 11,71S tons. 400' x 52' 3" x 25' 6". Reciprocating engines, 2,17S HP. 11 kts.

HIFAISTOS (ex-Khios, ex-Marie Reppol, 1920). Repair ship and submarine tender, former German merchantman. 4,550 tons gross. 360' 4" x 50' x 23'. 2,500 HP. 11.5 kts. Armament: 4 4" AA.

HAITI

Nos. 1, 2. Coastguard patrols.

IRAN

SLOOP

BAHR, PALANG (both 1931). Built in Italy. 950 tons. 204' 9" p.p. x 29' 6" x 10'. Diesels, 1,900 HP. 15 kts. 3 4", 2 MG.

Bahr was sunk by British naval forces during the Anglo-Russian occupation of Iran, but she is stated to be salvageable.

GUNBOATS

HIRA (ex-Chahbaaz), LAL (ex-Simorgh), MOTI (ex-Karkas), NILAM (ex-Charogh) (all 1931). Built in Italy. 331 tons. 170' p.p. x 22' x 6'. Diesels, 900 HP. 15.5 kts. 2 3", 2 37 mm AA.

SHAHIN (ex-Pahlavi, ex-Fatiya, ex-FM-24, 1917). Former German minesweeper, purchased in 1923. 135 tons. 132' 6" w.l. x 19' 8" x 4'. Reciprocating engines, 800 HP. 16 kts. Armament: 1 3-pounder. Stationed in Caspian.

OTHER VESSELS

AZERBAIJAN (193S). Patrol vessel, built in Italy. 28 tons. 68' 6" x 12' 6" x 3' 6". Two screws, 300 HP. 14 kts. 1 37 mm. Sisters, *Gehlani* and *Mazenderan*.

CHAHSEVAR (1930). Built in Holland. Royal yacht. 530 tons. 176' 6" x 25' 4" x 10' 6". Diesels, 1,300 HP. 15 kts. In Caspian Sea.

GEHLANI (193S). Patrol vessel, built in Italy. Sister of *Azerbaijan*.

HOMAY (1931). Built in Italy. Supply ship. 700 tons.

MAZENDERAN (193S). Patrol vessel, built in Italy. Sister of *Azerbaijan*.

NEYROU (1934). Tug. Built in Italy.

IRAQ

Nos. 1-4 (Thornycroft, 1937). Patrol vessels. 67 tons. 100' x 17' x 3'. 280 HP. 12 kts. 1 3.7" howitzer, 2 3" trench mortars, 4 MG.

Royal yacht, present name unreported (ex-Sans Peur, ex-Restless, 1923). 1,02S tons. 850 HP. 13 kts.

Tug, present name unreported (ex-Alarm, ex-St. Ewe, 1919). Of British Saint class.

MEXICO

SLOOP-TRANSPORT

DURANGO (Valencia, 193S). Standard Displacement: 1,600 tons. 282' x 40' x 10'. Two screws, geared turbines, 6,500 SHP. 20 kts. Armament: 2 4", 4 2S mm AA (paired), 8 13 mm AA. Also accommodates 40 officers, 450 men and 80 horses. A sister, *Zacatecas*, was taken over by the Spanish navy on completion and renamed *Calvo Sotelo*.

SLOOPS

GUANAIUATO (Ferrol), POTOSI (Cadiz), QUERETARO (Ferrol) (all 1934). Standard Displacement: 1,300 tons. 260' x 37' 9" x 10'. Two screws, geared turbines, 5,000 SHP. 20 kts. Armament: 3 4", 4 25 mm AA (paired), 8 13 mm AA. First two stationed in Pacific, last in Atlantic.

NICOLAS BRAVO (Italy, 1903). Displacement: 1,227 tons. 242' x 34' x 9' 9". Two screws, 3,000 HP. 12.25 kts. Armament: 2 4", 4 6-pounder.

PATROL VESSELS

CS-11-13. Sub chasers of standard U. S. PC type, transferred to Mexico under lend-lease late in 1943. For particulars, see U. S.

CS-01. Large motor launch of one of standard U. S. types (possibly a Coast Guard 83-footer), transferred to Mexico in 1943.

HALCON (San Diego, 1941) and others. 50 tons. No further details available.

G-20-29 (Bilbao, 1934-35). Standard Displacement: 130 tons. 153' w.l. x 16' 6" x 5' 3". Two screws, Diesels, 3,000 HP. 26 kts. Armament: 2 25 mm AA, 4 13 mm AA. Of British design, and built in Spain with German engines and other German material.

MAZATLAN, ACAPULCO (ex-Salinos), VERA CRUZ (1918). Ex-Canadian trawlers, purchased 1920. 486 tons. 133' x 24' x 13' 6". Coal-fired, SS7 HP. 8 kts. 1 6-pounder, 2 MG.

OTHER VESSELS

COAHUILA, JALISCO (Cramp, 1916). Transports operated by Free Ports Department. 5,794 tons gross. 1,350 HP. 10.5 kts.

PROGRESO (Italy, 1907). Training ship. 1,590 tons. 230' x 36' 6" x 11'. Coal-fired, 1,400 HP. 13 kts. 4 6-pounder.

NETHERLANDS

The Royal Netherlands Navy has suffered greater proportional losses than any other Allied force. By the end of 1943, two of its original five cruisers were gone; all eight of its original destroyers, plus one completed in England after the invasion of Holland; its one coast defense ship; three gunboats, one sloop and three torpedo boats; fourteen of its original 26 submarines; nine of thirteen minelayers; all but two of sixteen minesweepers; all twelve MT8s stationed in the Far East; the entire Netherlands Indies government marine of about 30 vessels; and half a dozen other auxiliaries. See war loss section for details.

CRUISERS

TROMP (S/24/37), JACOB VAN HEEMSKERCK (9/16/39). *Tromp* built by Netherlands Shipbuilding Co. at Amsterdam, *Von Heemskerck* begun by latter company and taken to England for completion after German invasion. Standard Displacement: 3,350 tons. 433' x 40' 9" x 15' max. Two screws, geared turbines, 56,000 SHP. 33 kts. Armament: *Tromp*, 6 S.9"/50 8ofors in twin gunhouses, 8 40 mm AA, 4 12.7 mm AA, 4 DCT, 6 21" TT in triple mounts; *Van Heemskerck*, 8 4" AA twinned, several smaller AA. Planes: 1, handled by derrick. Armor: 2"-2.5" side, 1.5" deck. *Van Heemskerck's* armament reflects British war experience of need for light AA cruisers.

SUMATRA (Netherlands Shipbuilding, Amsterdam, 12/29/20). Standard Displacement: 6,670 tons. 500' 6" x 52' 6" x 18'. Three screws, three sets turbines, 72,000 SHP. 31 kts. Armament: 10 S.9"/50, 6 40 mm AA, 6 20 mm AA, 4 2-pounder saluting, 12 mines. Planes: 2, handled by crane. Armor: 2"-3" side, 1"-2" deck, 4" gun shield faces. Ventilation system specially designed for service in tropics. *Sumatra* was one of the few Dutch vessels in Eastern waters to survive the holocaust of the Java Sea in 1942. She escaped only because she was undergoing refit at Surabaya when the Japanese struck. Useless as a weapon at that moment, she was sailed to Colombo. Her sister, *Java*, and another fine Dutch cruiser, *De Ruyter*, went down in the Battle of the Java Sea.

DESTROYERS

ISAAC SWEERS, PIET HEIN. Early in 1943 it was stated that two destroyers of these names, to replace lost vessels, would be completed in England for the Royal Netherlands Navy. They are probably of Javelin or Laforey type. Very likely the Netherlands government-in-exile is acquiring them by simple purchase. The well-financed Dutch have made a practice of accepting little or no aid of lend-lease type.

JAN VAN GALEN (ex-Noble), TIERK HIDDUS (ex-Nonpareil). British-built destroyers (no launch date reported, but probably 1940) of the N series of Javelins, transferred to the Netherlands in 1942, presumably by purchase. Standard Displacement: 1,690 tons. 348' x 35' x 9'. Geared turbines, 40,000 SHP. 36 kts. Armament: 6 4.7", 1 4" AA, 6 smaller, 5 21" TT in quintuple mount.

TORPEDO BOATS

Z-7, 8 (1915). 263 tons. 193' x 19' 8" x 5' 6". Coal- or oil-fired, reciprocating engines, 5,000 HP. 27 kts. Armament: 2 3", 2 MG, 4 17.7" TT (one pair and two singles).

ANTI-SUBMARINE CRAFT

KÖNINGEN WILHELMINA (ex-PC-468, 1942). U. S. submarine chaser of 175-foot type, given or lend-leased to the Netherlands.

FRISIO (ex-Cornetion). British-built Flower-class corvette, acquired by Netherlands in 1942 and renamed for a gunboat sunk in the German invasion of Holland.

VAN KINSBERGEN (Rotterdam, 1/S/39). Sloop, built as gunnery training vessel, but now doubtless employed on combat duties. Standard Displacement: 1,760 tons. 338' x 38' x 11'. Geared turbines, 16,000 SHP. 25.5 kts. Armament: 4 4.7", 4 40 mm AA, 4 12.7 mm AA. Deck and conning tower armored.

FLORES, SOEMBA (both 1925). Sloops. Standard Displacement: 1,457 tons. 248' x 37' 6" x 11' 9". Reciprocating engines, 2,000 HP. 15 kts. Armament: 3 S.9", 1 3" AA, 4 12.7 mm AA, 4 MG. 1" armored deck. Can carry one seaplane.

GRUNO (1913). 540 tons. 172' 3" x 28' x 9' 3". Re-engined in 1934, Diesels, 1,500 HP. 14 kts. Armament: 4 4.1", 1 12.7 mm AA, 2 MG. Armor: 2" side, .67" deck, 2" conning tower.

Z-5 (1913). Ex-torpedo boat of Z-7 type. Specifications identical except torpedo tubes removed and engine power reduced to 3,000 HP, speed to 22 kts.

SUBMARINES

DOLFIN. Completed in Britain, 1942. Either begun in Holland before the invasion or constructed in Britain to Dutch designs. Reported to resemble O-21 type.

O-21 (Schelde, 1939), O-23 (Rotterdam, 1939), O-24 (Rotterdam, 1940). Displacement: Surface, 888 tons; submerged, 1,380. 255' x 21' 6" x 13'. Diesels, 5,200 HP, and electric motors, 1,000. 19.5 kts., surface; 9, submerged. Armament: 8 21" TT (four bow, two stern, two deck), 1 3.5", 2 40 mm AA, 1 12.7 mm AA. Three more vessels of this type, O-25-27, were destroyed (the first scuttled, the others blown up on the stocks before launching) to prevent capture. Another, O-22, has been lost. O class submarines were originally built for service in Far East and were to have been given K numbers instead of O.

O-19 (ex-K-19, Schiedam, 1938). Displacement: 967 tons, surface; 1,468, submerged. 264' 9" x 23' 3" x 12' 9". Diesels, 5,300 HP, and electric motors, 1,000. 20 kts., surface; 9, submerged. Armament: 8 21" TT, 1 3.5", 2 40 mm AA, 1 12.7 mm AA; fitted for minelaying (capacity, 40 mines). Sister O-20 has been lost. O designation originally meant home service, and K, service in Far East. Distinction, however, no longer has any meaning.

K-14, 15 (both Rotterdam, 1932). Displacement: Surface, 771 tons; submerged, 1,008. 242' 3" x 25' x 12' 8". Diesels, 3,200 HP, and electric motors, 1,000. 17 kts., surface; 9, submerged. Armament: 8 21" TT (four bow, two stern, two deck), 1 3.5", 2 40 mm AA. Sisters K-16-18, lost.

O-13 (Fijenoord, 1931), O-14 (Schelde, 1931). Displacement: 546 tons, surface; 704, submerged. 198' 3" x 17' 9" x 11' 9". Diesels, 1,800 HP, and electric motors, 600. 15 kts., surface; 8, submerged. Armament: 5 21" TT (four bow, one stern), 2 40 mm AA. Sisters O-12, 15, lost.

O-9 (Schelde, 1925), O-10 (Netherlands S.8., 1925). Displacement: 483 tons, surface; 647, submerged. 179' 3" x 17' 6" x 11' 8". Diesels, 900 HP, and electric motors, HP unreported. 12 kts., surface; 8, submerged. Armament: 2 21" TT (bow), 3 17.7" TT (two bow, one stern), 1 3.5", 1 MG. O-11 of same type destroyed to prevent capture while under repair.

AT WAR

OR

IN PEACE



Official U. S. Navy Photo



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MARINE ELECTRICAL EQUIPMENT

K-11, 12 (both Fijenoord, 1924). Displacement: 611 tons, surface; 815, submerged. 218' 9" x 19' x 12' 6". Diesels, 1,200 HP, and electric motors, HP unreported. 15 kts., surface; 8, submerged. Armament: 2 21" TT (bow), 4 17.7" TT (two bow, two stern), 1 3.5", 1 12.7 mm. K-13 of this type lost.

OTHER VESSELS

Vosper-type MT8s are being built for the Netherlands Navy in the United States. Dutch MT8s of the same or other types are also under construction in Canada. Funds for four of 70-foot type have been provided by the Prince Bernhard fund. Four of Scott-Paine type were delivered to the Netherlands Navy in 1942 by the Canadian Power Boat Co. In 1941, the Dutch also secured a number of Higgins type from Higgins Industries, New Orleans.

ABRAHAM CRIJNSSEN (1936). Minesweeper. 525 tons. 183' x 25' 6" x 7'. 1,690 HP. 15 kts. 1 3"/55, 4 12.7 mm AA, 1 MG. Also fitted to lay mines. *Jan van Gelder* a sister.

DOUWE AUKES (1922). Minelayer. 687 tons. 180' 6" x 28' 6" x 10' 6". Coal-burning reciprocating engines, 1,000 HP. 13 kts. 3 3" AA, 2 12.7 mm AA, 2 MG.

HYDROGRAAF (1911). Surveying vessel. 300 tons. 132' 7" x 21' 9" x 9' 6". Coal-burner, 360 HP. 9 kts.

JAN VAN BRAKEL (1936). Minelayer. 740 tons. 181' 6" x 30' x 10'. Reciprocating engines, 1,600 HP. 15 kts. 2 3", 1 37 mm, 4 12.7 mm AA.

JAN VAN GELDER (1937). Minesweeper. *A. Orijnsen*, sister.

MEDUSA (1911). Minelayer. 593 tons. 163' x 29' 6" x 9'. Coal-burner, 800 HP. 12 kts. 3 3" AA, 2 12.7 mm AA, 1 MG.

TM-51 (British Power Boat Co., 1939). MT8. 32 tons. 70' x 20' x 4' 6". Gasoline engines, 3,000 HP. 42.5 kts. 4 18" TT, 2 20 mm AA, 6 depth charges.

WILLEM VAN DER ZAAAN (1938). Minelayer. 1,300 tons. 247' x 36' 9" x 11'. Reciprocating engines, 2,200 HP. 15.5 kts. 2 4.7"/50, 4 40 mm AA, 4 12.7 mm AA. Equipment includes seaplane handled by crane. Used as training ship in peacetime.

ZUIDERKRUIS (1922). Supply ship. 2,660 tons. 256' x 36' 9" x 14' 3". 1,600 HP. 12.5 kts. ex-cable ship.

NICARAGUA

ex-CG-274 (1924). Former U. S. Coast Guard cutter, purchased 1938. Wood. 37 tons. 75' x 13' 9" x 4'. Gasoline engine, 400 HP. 13.5 kts. 1 1-pounder.

NORWAY

Norwegian vessels in the fleet of the Norwegian government-in-exile are marked (A). Others are under German control.

COAST DEFENSE SHIPS

HARALD HAARFAGRE, TORDENSKJOLD (both 1897). Displacement: 3,858 tons. 304' x 48' 6" x 16' 6". Two screws, coal-fired reciprocating engines, 4,500 HP. 16 kts. Armament as of 1940: 2 8.2"/44 in single turrets, 6 4.7"/44, 6 3" (12-pounder), 2 3" AA, 2 1-pounder. Armor: 4"-7" belt, 2" deck, 5"-8" turrets. Reported converted into AA ships by the Germans. Possibly renamed *Thetis* and *Nymphe* respectively.

DESTROYERS

Royal Norwegian Navy mans H.M.S. *Lincoln* and *St. Albans* (which still fly British flag), former U. S. flush-deckers. *Bath*, among the ex-U. S. flush deckers which have been lost, was also Norwegian-manned.

Two destroyers were laid down at Horten, near Oslo, in 1939. Their partly completed hulls fell into German hands intact, and they are reported to be nearing completion. They were launched by the Nazis in 1941. Specifications: Standard Displacement, 1,220 tons; 319' x 32' 9" x 9'; geared turbines, 30,000 SHP; 34 kts.; armament, 4 4.7", 2 40 mm AA, 2 12.7 mm AA, 4 21" TT in pairs.

TORPEDO BOATS

(A) SLEIPNER (1936), GYLLER (1938), 8ALDER (1939), ODIN (1939). Standard Displacement: 597 tons. 243' 9" x 25' 6" x 7'. Two screws, geared turbines, 12,500 SHP. 32 kts. Armament: 3 4", 1 40 mm AA, 2 MG, 2 21" TT (except *Gyller*, 4 21" TT) paired, 4 DCT; also fitted for minelaying.

(A) DRAUG (1908), TROLL (1910). Standard Displacement: 540 tons. 227' x 23' 6" x 8' 9" max. Coal-fired reciprocating engines, 7,500 HP. 27 kts. Armament: 6 3", 3 18" TT.

ANTI-SUBMARINE CRAFT

Glaidsdale, British navy Hunt type escort destroyer, is Norwegian-manned, as was also *H.M.S. Eskdale*, lost in 1943.

Four British Navy Flower-type corvettes, *Acanthus*, *Eglantine*, *Potentilla* and *Rose*, are likewise Norwegian-manned for the duration. As other Norwegian-manned craft, they are listed under Great Britain.

(A) KING HAAKON VII (ex-PC-467, 1942). U. S. built submarine chaser of standard American PC type, transferred to Norway in 1942 under lend-lease. For specifications, see United States.

COASTAL TORPEDO BOATS

SNÖGG (1916). 220 tons. 173' 11" x 18' x 5' 2". 3,500 HP. 25 kts. Armament: 2 3", 4 18" TT; also fitted for minelaying.

SKARV (1907), KJELL (1912). 92 and 94 tons respectively. 134' 6" x 14' 9" x 7'. Coal-fired, 1,700 HP. 25 kts. 2 3-pounder (*Skarv*), 1 3" (*Kjell*); 3 18" TT (both).

ÖRN (1904), LOM (1906). 70 tons. 118' x 14' 9" x 6'. 1,000 HP. 22 kts. 2 1-pounder, 2 18" TT.

FALK, HAUKE (both 1903). 63 tons. 115' x 14' 9" x 5'. 750 HP. 20 kts. 2 1-pounder, 1 18" TT. Also fitted as minesweepers.

LAKS (1900). 90 tons. 131' x 16' x 7'. Coal-fired, 1,000 HP. 21 kts. 2 1-pounder, 2 18" TT.

BRAND (1899). 79 tons. 130' 9" x 16' x 6' 9". Coal-fired, 1,100 HP. 21 kts. 2 MG, 2 18" TT.

KVIK (1898), HVAS (1900), KJAEK (1900). 67 tons (*Kvik*), 64 (others). 115' x 14' 9" x 5'. Coal-fired, 650 HP. 19 kts. 2 1-pounder. (TT removed).

BLINK, LYN (both 1896). 65 tons. 115' x 12' 6" x 6'. Otherwise as *Kvik*.

SUBMARINES

(A) ULA. British-built, presumably of Ursula type. Apparently transferred outright to Norwegian navy.

(A) B-1 (1923), 8-2 (1924), 8-4 (1927), 8-5 (1929), 8-6 (1929). Electric Boat design, built in Norway. Displacement: 420 tons, surface; 545, submerged. 167' 6" x 17' 6" x 11' 6". Diesels, 900 HP, and electric motors, 700. 14.75 kts., surface; 11, submerged. 4 18" TT (two bow, two stern), 1 3".

AUXILIARIES AND SPECIAL TYPES

MINELAYERS

OLAV TRYGGVASON (1933). Standard Displacement: 1,596 tons. 319' x 37' 6" x 12'. Two screws, two geared turbines plus two sets Diesels with electric drive for cruising. Total, 6,000 SHP. Speed: 20 kts. Armament: 4 4.7", 1 3" AA, 2 3-pounder, 2 MG; stowage for 280 mines. Possibly renamed *Albatros* by Germans and rearmed for other purposes.

GLOMMEN, LAUGEN (both 1917). 335 tons. 137' 10" x 27' 11" x 6' 2". Coal-fired, 170 HP. 9.5 kts. 2 3"; stowage for 50 mines.

At the time of the German invasion, the Norwegian navy also included six small old mine-layers: BRAGE (1876), 254 tons; GOR (1885), 276; NOR (1878), 254; ULLER (1874), 233; VALE (1878), 233; and VIDAR (1881), 254.

MINESWEEPERS

OTRA, RAUMA (both 1939). 320 tons. 167' x 23' x 6'. Reciprocating engines, 900 HP. 13.5 kts. 1 40 mm AA, 2 12.7 mm.

(A) ALCMARIA; (A) BJERK (1912), 182 tons gross; (A) BÖRTIND; (A) BREVIK (ex-Kos 13); (A) DRÖBAK (ex-Kos 4); (A) GRIMSTAD (ex-Kos 15); (A) HVAL 5; (A) JOHN WILLIAMSON; (A) KARMÖY; (A) MANDAL (ex-Kos 14); (A) NOBLE NORA (1912), 160 tons gross; (A) NORDHAV; (A) OKSOY; (A) POLAR; (A) SYRIAN; (A) THORODD; (A) TRANSVAALIA (1912), 160 tons gross; (A) VARDØ (ex-Kos 18). Former whalers.

PATROL VESSELS

(A) FARSUND (ex-Kos 6), (A) HONNINGSVAG, (A) HORTEN (ex-Kos 2), (A) MOLDE (ex-Kos 20), (A) NAMSØS (ex-H. J. Bull), (A) NARVIK (ex-Kos 9), (A) RISØR (ex-Kos 5), (A) SVOLVÆR (ex-Kos 1). All former whalers taken over by Norwegian navy.

OTHER VESSELS

Eight MT8s and 4 motor launches were in service in 1942. Particulars not announced.

An unnamed submarine and small craft tender was in service under the Allied flag in 1942. No details announced.

FARM (1900). Transport. 300 tons. 9 kts. 2 9-pounder, 2 1-pounder.

(A) HEIMDAL (1892). Fishery protection vessel. 640 tons. Length, 181'; draught, 13'. Coal-fired, 625 HP. 12 kts. Armament: 4 3".

(A) NORDKAPP (1937). Fishery protection vessel. Standard Displacement: 243 tons. 130' 6" x 21' 6" x 7' 6". Single screw, Diesels with electric drive, 830 SHP. 13.75 kts. Armament: 1 47 mm.

SARPEN (1860; rebuilt 1918). Submarine tender. 187 tons. 9 kts. 2 9-pounder, 1 1-pounder.

POLAND

CRUISER

SMOK (ex-Dragon, 12/29/17). British Dauntless class cruiser transferred to Poland in 1943. *Smok* is a translation of *Dragon*. For specifications, see Great Britain.

DESTROYERS

PIORUN (ex-Nerissa, 1940). British N-series Javelin, transferred to Poland. For specifications, see Great Britain. A British M-series *Laforey*, *Orkan* (ex-*Myrmidon*), likewise transferred to Poland, was lost late in 1943.

GARLAND (1935). British G-class vessel, transferred to Polish Navy in 1939 and name retained. Identical with *H.M.S. Gallant* except three instead of four 4.7" guns.

BLYSKAWICA (1936). Built in England. Standard Displacement: 2,144 tons. 374' x 37' x 10' 3". Two screws, geared turbines, 54,000 SHP. Speed: 39 kts. Armament: 8 4.7" twinned, 1 4", 4 47 mm AA, 4 MG, 3 21" TT in triple mount, 2 DCT; also fitted for minelaying. Strengthened for ice navigation. Sister *Grom* lost in 1940.

BURZA (1929). Built in France. Standard Displacement: 1,540 tons. 351' x 29' x 9' 9". Geared turbines, 35,000 SHP. Speed: 33 kts. Armament: 2 4.7", 1 4" AA, 2 47 mm and several smaller AA; 3 21" TT in triple mount. Resembles French *Simoun* class. Sister *Wicker* lost in 1939.

ANTI-SUBMARINE CRAFT

KRAKOWIAK (ex-Silverton), SLAZAK (ex-Bedolo). British Hunt type escort destroyers transferred to Poland. For particulars, see Great Britain. *Kujawiak* (ex-Oakley) of same type has been lost.

SUBMARINES

SOKOL (1941), DZIK (1942). British-built vessels, probably of *Ursula* type, but no particulars have been published.

SEP (1938). Built in Holland. Displacement: 1,110 tons, surface; 1,473, submerged. 275' 6" x 22' x 13'. Diesels, 4,740 HP, and electric motors, 1,000. 19 kts., surface; 9, submerged. 8 21" TT, 1 3.5", 2 40 mm AA; also fitted for minelaying. *Sep* fled to Stockholm in 1939 and is now interned.

RYS (1929), WILK (1929), ZBIK (1930). Built in France. Displacement: 980 tons, surface; 1,250, submerged. 246' x 18' x 13'. Diesels, 1,800 HP, and electric motors, 1,200. 14 kts., surface; 9, submerged. 6 21" TT, 1 3.9", 1 37 mm AA; also carry 38 mines. *Rys* and *Zbik* were interned in Sweden in 1939.

OTHER VESSELS

ISKRA (1917). Sail training schooner. 560 tons. 127' 9" x 25' x 9' 9". Auxiliary motor, 130 HP. 7.5 kts.

S-1-3 (1940). Motor gun boats, built in Britain. 34 tons. 72' x 16' 9" x 5' 6". Gasoline motors, 3,450 HP. 42 kts. Armament: 2 light MG, 10 depth charges.

YUGOSLAVIA

The only Yugoslav units to escape destruction or capture by the Germans during the conquest of Yugoslavia in 1941 were a submarine, *Nebojsa* (marked A in the text) and an MT8, *Velebit*, since lost. Most of the surviving ships appear to have been taken over by the Italian navy, and re-requisitioned by the Germans since Italy's surrender. Two submarines under construction at Kiel were also taken over by the Germans and are listed under Germany.

DESTROYERS

SPLIT (laid down at Split in 1939). Machinery to have been English-supplied. Present status uncertain. Standard Displacement: 1,875 tons. 393' 9" x 37' x 10' 4". Two screws, geared turbines, 50,000 SHP. Speed: 37 kts. Armament: 5 5.5", 10 40 mm AA, 8 MG AA, 6 21" TT in triple mounts.

DUBROVNIK. Taken over by Italy and renamed *Premuda*, under which name particulars will be found.

BEOGRAD (Nantes, France, 1937), LJUBLJANA (Split, 1938). Standard Displacement: 1,210 tons. 313' x 31' x 9' 8". Geared turbines, 44,000 SHP. 38 kts. 4 4.7", 4 40 mm AA, 6 21" TT in triple mounts; 30 mines also carried. *Ljubljana* wrecked in Split harbor in 1940, but salvaged same year. May have been taken over by Italy and renamed *Sebenico*.

TORPEDO BOATS

T-5 (ex-87 F), T-6 (ex-93 F), T-7 (ex-96 F), T-8 (ex-97 F) (all 1913-15). Former Austrian vessels. 266 tons, 188' 4" x 18' 8" x 4' 11". Mixed firing, turbine, 5,000 SHP. 24 kts. 2 66 mm, 1 MG, 4 18" TT in pairs.

T-1-4 (ex-76 T-79 T) (1913-15). Former Austrian vessels. 262 tons. Otherwise as T-5 group.

SUBMARINES

Two small submarines laid down at Kiel to Yugoslav order in 1939 appear to have been requisitioned by Germany and will be found under the German navy.

HRASTI, (A) NEBOISA (both 1927). Built in England. Displacement: 975 tons, surface; 1,164, submerged. 236' 3" x 24' x 13'. Diesels, 2,400 HP, and electric motors, 1,600. 15 kts., surface; 10, submerged. 6 21" TT, 2 4" AA. *Nebojsa* is the only pre-war Yugoslav navy vessel.

except an MT8 since lost, to survive the invasion of Yugoslavia and to be operating with the Allies. *Hrabri* and *Nebojsa* were built from the parts for two British L class submarines, L-67 and 68, which were never actually laid down.

SMELI (1928), OSVETNIK (1929). Built in France. Displacement: 600 tons, surface; 809, submerged. 227' x 18' x 14'. Diesels, 1,440 HP, and electric motors, 1,000. 14 kts., surface; 9, submerged. 6 21.7" TT (four bow, two stern), 1 3.9", 1 1-pounder AA, 1 MG.

AUXILIARIES AND SPECIAL TYPES

RIVER MONITORS

VARDAR (ex-Bosnia, 1915). Former Austro-Hungarian vessel. 530 tons. 200' x 34' 6" x 4' 3". 1,600 HP. 13 kts. Armament: 2 4.7"/45, 2 4.7"/10 howitzers, 2 66 mm AA, 7 MG. Armor: 1.5" belt, 1" deck, 2" turrets. Sister of Roumanian *Basarabia*.

DRAVA (ex-Enns, 1913). Formerly Austro-Hungarian. 450 tons. 190' 3" x 34' 6" x 4' 3". 1,500 HP. 13 kts. Armament: 2 4.7"/45, 3 4.7"/10 howitzers, 2 66 mm, 7 MG. Armor: 1.5" belt, 1" deck, 2" turrets. Sister of Roumanian *Bucovina*.

SAVA (ex-Bodrog, 1904). Formerly Austro-Hungarian. 380 tons. 183' 9" x 31' 3" x 4'. Coal-fired. 1,200 HP. 9 kts. Armament: 2 4.7"/35, 1 4.7"/10 howitzer, 1 66 mm AA, 2 MG. Armor: 1.5" belt, 1" deck, 1.5"-3" turrets.

MORAVA (ex-Körös, 1892). Formerly Austro-Hungarian. 390 tons. 177' 2" x 29' 6" x 4'. Coal-fired. 1,200 HP. 9 kts. Armament: 2 4.7"/35, 1 66 mm, 2 MG. Armor: 2" belt, .75" deck, 3" turrets.

MOTOR TORPEDO BOATS

DINARA, DURMITOR, KAIMAKCALAN, ORJEN, RUDNIK, SUVOBOR, TRIGLAV (1936-37). Built in Germany. 60 tons. 92' x 14' x 5'. Four gasoline motors, 3,000 HP. 34 kts. 1 47 mm AA, 1 MG AA, 2 18" TT. *Velebit* of this type escaped from Yugoslavia in 1941, but was so badly damaged she had to be scrapped.

CHETNIK (ex-TC-2), USKOK (ex-TC-1) (both 1927). Built by Thornycroft. 55' in length, 11' in beam. 750 HP. 37 kts. Auxiliary engine fitted for cruising. 2 light MG, 2 18" torpedoes, 4 depth charges.

MINELAYERS

GALEB (ex-M-100), JASTREB (ex-M-112), KOŠAC (ex-M-121), LAŠUD (ex-M-106), ORAO (ex-M-97), SOKOL (ex-M-144) (1917-18). Former German minesweepers, acquired after World War I and modified. 330 tons. 192' x 23' 6" x 7'. 1,800 HP. 15 kts. 2 3.9" AA, 4 3-pounder.

MALINSKA, MARIAN, MELJINE, MLJET, MOSOR (all 1931). Built by Yarrow at Kraljevica. 130 tons. 174' x 26' 3" x 13'. Reciprocating engine, 280 HP. 9 kts. 1 11-pounder.

RIVER PATROL VESSELS

GRANICAR, STRAZAR (1929). 36 tons. Gasoline motors, 9 kts. 1 3-pounder. On Lake Ohrid.

DRAGOR (1928). 250 tons. 164' x 26' 3" x 3' 9". 480 HP. 10 kts. Employed as royal yacht on Danube.

CHER (1909). 256 tons. 170' 6" x 23' x 3'. 400 HP. 15 kts. 2 MG.

SISAK (ex-Triglav, 1915). 90 tons. 118' x 19' 6" x 6'. 350 HP. 11 kts. 2 MG.

SAŠAC (ex-Avala, 1914). 90 tons. 101' 9" x 23' x 4' 6". 360 HP. 8 kts.

OTHER VESSELS

8ELI ORAO (Trieste, 1939). Patrol vessel. 567 tons. 213' 3" x 26' 6" x 9' 4". Diesels, 1,900 HP. 18 kts. 2 3".

D-2 (ex-No. 36, 1888). Former Austro-Hungarian torpedo boat. Minesweeper. 78 tons. 128' x 14' 9" x 3' 3". Reciprocating engines, 700 HP. 17 kts. 2 37 mm.

DALMACIJA (ex-Niobe, 1899). Old cruiser purchased from Germany and converted to training vessel, 1926. 2,360 tons. 342' 3" x 38' 6" x 17' 3" max. Two screws, coal-fired reciprocating engines, 8,000 HP. 21 kts. Armament: 6 3.4"/55 (new model guns). Armor: .75"-2" deck, 3" conning tower.

HVAR (ex-Solun, ex-Umtali, 1896). Submarine tender. 3,600 tons. 318' 3" x 39' x 13'. Reciprocating engines, 1,100 HP. 12 kts.

IADRAN (1932). Sail training vessel. 720 tons. 190' 3" x 29' x 13' 9". Auxiliary Diesel, 375 HP. 8 kts.

JAKI (1915). Tug. 370 tons. 1,200 HP. 15 kts.

LOVCHEN (1932). Water carrier. 561 tons. 111' x 25' 6" x 14' max. Diesel, 300 HP. 8.5 kts.

MARJIVI (1898). Tug. 130 tons. 300 HP. 12 kts.

PERUN (Antwerp, 1939). Oiler. 4,500 tons. 311' 6" x 45' 6" x 20'. Diesels, 1,250 HP. 10 kts. 4 40 mm AA, 2 15 mm AA.

SILNI (1914). Tug. 200 tons. 670 HP. 10 kts. 2 47 mm.

SITNICA (ex-Najade, 1891). Submarine tender. 370 tons. 157' 6" x 23' x 6' 6". Reciprocating engines, 500 HP. 9 kts. 2 3-pounder.

SNAZNI (1917). Tug. 100 tons. 300 HP. 10 kts.

SPASILAC (1929). Salvage vessel. 740 tons. 174' x 26' 3" x 13'. Reciprocating engines, 2,000 HP. 15 kts.

USTRAJNI (1917). Tug. 160 tons. 250 HP. 9 kts.

VILA (ex-Dalmata, 1896). Royal yacht. 230 tons. 325 HP. 12 kts.

SEAPLANE CARRIER

ZMAJ (Hamburg, 1928). 1,870 tons. 249' 4" x 42' 8" x 11' 6". Two screws, Diesels, 3,260 HP. 15 kts. 1 4" AA. Carries ten seaplanes. Burnt out and rebuilt in 1929-30.

SMALLER AXIS NAVIES

BULGARIA

TORPEDO BOATS

DERZKI, KHRAŠRI, STROGI (1907-8). 100 tons. 126' 6" x 13' 3" x 8' 9". Coal-fired, 2,000 HP. 26 kts. 2 47 mm, 1 MG, 2 18" TT. Built in sections in France and assembled at Varna. *Smyeli* of same type accidentally lost, 1943.

OTHER VESSELS

Nos. 1, 2 (Lürssen, Vegesack, 1938-9). MT8s. 60 tons. 92' x 14' 9" x 5' 6". Gasoline engines, 3,150 HP. 36 kts. 1 MG AA, 2 21" TT.

ASSEN (1912). Sail training vessel. 240 tons. Auxiliary engines, 120 HP. 7 kts. 2 65 mm, 1 MG.

BELOMORETZ (ex-C-27), CHERNOMORETZ (ex-C-80). Motor patrol vessels, purchased from France, 1922. 77 tons. 17 kts. 1 47 mm, 2 MG.

KAMCLA (1898). Sail training vessel. Auxiliary engines, 10 kts.

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PUPPET CHINA

All the larger units of the Chinese navy are in the hands of the Japanese-run Nanking regime of Wang Ching-wei.

LIGHT CRUISERS

NING HAI (Japan, 1931), PING HAI (Shanghai, 1932). Standard Displacement: 2,500 tons. 360' x 39' x 13'. Geared turbines, 9,500 SHP. Coal-fired. 22.25 kts. Armament: 6 5.5" in twin gunhouses, 6 3.5", 8 MG, 4 21" TT in twin mounts. Armor: 1" deck, thin plating elsewhere. Machinery and armament Japanese. In reality are slow, over-armed, oversized destroyers rather than light cruisers.

SLOOP

YAT SEN (1930). 1,650 tons. 275' x 34' x 11'. Coal-fired, 4,000 HP. 20 kts. 1 6", 1 5.5", 4 3" AA, 2 3-pounder, 4 MG.

GUNBOATS

MING SEN (Shanghai, 1931). 600 tons. 210' x 27' x 6' 6". Coal-fired. 18 kts. 1 4.7", 1 4", 2 3" AA, 2 6-pounder.

YUNG CHIEN, HAI CHING (ex-Yung Chi) (Shanghai, 1915). 800 tons. 215' 6" x 29' 6" x 11' 6". Coal-fired, 1,350 HP. 13 kts. 1 4", 1 3", 4 3-pounder, 1 2-pounder AA, 2 1-pounder.

KIANG CHEN (Kobe, 1906). 550 tons. 180' w.l. x 28' x 7'. Coal-fired, two screws, 950 HP. 13 kts. 1 4.7", 1 3", 4 3-pounder, 4 MG.

FINLAND

COAST DEFENSE SHIPS

VÄINÄMÖINEN (Abo, 12/20/30). Standard Displacement: 3,900 tons. 305' x 55' 6" x 14' 9". Two screws, Diesel-electric drive, 5,000 HP. 15.5 kts. Armament: 4 10"/45 in twin turrets, 8 4.1" AA in twin gunhouses, 4 40 mm AA. Armor: 2.25" side, .5"-.75" deck, 4"-4.5" turrets. Sister *Ilmarinen* mined in Gulf of Finland, 1941.

SUBMARINES

(Several of the following may have been lost).

VESIKKO (Abo, 1933). Displacement: 250 tons, surface; 300, submerged. 134' 2" x 13' x 13' 6". Diesels, 700 HP, and electric motors, 360. 13 kts., surface; 7, submerged. Armament: 3 21" TT, 1 MG.

VESIHIIISI (1930), VETEHINEN (1930), IKU-TURSO (1931). All built at Abo. Displacement: 490 tons, surface; 715, submerged. 208' x 20' 4" x 10' 10". Diesels, 1,060 HP, and electric motors, 600. 14 kts., surface; 8, submerged. Armament: 4 21" TT, 1 3", 1 MG. May also carry 20 mines.

SAUKKO (Helsinki, 1930). Displacement: 100 tons, surface; 136, submerged. 106' 6" x 13' 6" x 10' 6". Diesels, 200 HP, and electric motors, HP unreported. 9 kts., surface; 6, submerged. Armament: 2 18" TT, 9 mines, 1 MG.

AUXILIARIES AND SPECIAL TYPES

GUNBOATS

HÄMEENMAA (ex-Wulf, ex-Pingvin), UUSIMAA (ex-Beo, ex-Golub). Both built at Helsinki, 1917, for Russian Czarist government, seized by Germans, then acquired by Finns. Displacement: 400 tons. 170' 6" x 24' 6" x 11'. Coal-fired reciprocating engines, 1,400 HP. 15 kts. Armament: 2 3.9", 1 40 mm AA, 3 MG. The Soviet *Kopchik* and *Pinoer* are sisters of *Hameenmaa* and *Uusimaa*.

TURUNMAA (ex-Orlan, 1916). Built at Abo for Russian Czarist government. Standard Displacement: 342 tons. 164' x 22' 6" x 9' 6". Coal-fired reciprocating engine, 1,000 HP. Armament: 2 3", 3 MG. Sister *Karjala* lost in 1942.

MOTOR TORPEDO BOATS

Three Higgins-type MT8s were purchased from Higgins Industries, Inc., in 1940.

NUOLI (ex-MTV-5, 1928), SYÖKSY (ex-MTV-4, 1928), RAJU (ex-MTV-7, 1929), VINHA (ex-MTV-6, 1929). First two built by Thornycroft, last two in Finland. 12 tons. 55' x 11' x 3' 3". 750 HP. 40 kts. Armament: 2 17.7" TT, 2 light MG, 2 depth charges.

ISKU (ex-MTV-3, 1926). 11 tons. 54' x 11' x 3' 8". 650 HP. 31 kts. Armament: 2 17.7" torpedoes in dropping gear (no tubes), 2 MG.

HURJA (ex-MTV-2, ex-MAS-221), SISU II (ex-MTV-1, ex-MAS-220). Built in Italy 1916, purchased, 1920. 13 tons. 53' x 9' 10" x 4'. 500 HP. 26 kts. Armament: 2 17.7" torpedoes, 2 MG.

MINELAYERS

RIILAHTI, RUOTSIINSALMI (both 1940). 300 tons. 15 kts.

LOUHI (ex-M-1, ex-Voin, 1917). Built originally for Russian Czarist government; also employed as submarine tender. 640 tons. 164' x 26' 3" x 8' 6". Coal-fired reciprocating engine, 1,000 HP. 11 kts. Armament: 2 3", 2 40 mm AA, 2 MG, 140 mines.

RAUTU (ex-Murman, 1917), VILPPULA (ex-T-2, 1916). 268 tons. 147' 8" x 20' 4" x 6' 6". Reciprocating engines, 450 HP. 12 kts. Armament: 1 3", 2 MG, 30 mines. Built originally for Russian Czarist government.

POMMI (ex-M-7, 1916), MIINA (ex-T-17, 1917). 80 tons. 65' 8" x 17' x 4'. Gasoline engines, 90 HP. 9 kts.

LOIMU (ex-T-21, 1915), LIESKA (ex-T-16, 1916), PAUKKU (ex-T-15, 1916). 60 tons. 62' 4" x 17' x 3' 8". Gasoline engines, 60 HP. 7.5 kts.

MINESWEEPERS

AHVEN, KIISKI, KUORE, LAHNA, MUIKKU, SARKI (1936-7). 17 tons. 56' 4" x 12' x 4' 3". 60 HP. 10.5 kts. Resemble AF-2.

8VA, 8VD, A-37, 38, 40, 42, 43, 45. 9 tons. 53' x 11' 10" x 4'. 45-60 HP. 8-9.5 kts.

8-3. 18 tons.

AF-2. 12 tons.

HAUKKA. 12 tons.

OTHER VESSELS

APU (ex-Avance, Kiel, 1899). Icebreaker. 800 tons. 144' x 35' 6" x 18'. 1,385 HP. 10 kts.

JÄÄKARHU (Rotterdam, 1926). Icebreaker. 4,825 tons. 246' x 63' x 21'. Three screws, reciprocating engines, 9,200 HP. 15 kts.

MURSU (ex-Stannum, Kiel, 1902). Salvage vessel. 6.5 tons gross. 131' x 41' x 15'. 500 HP. 8 kts.

MURTAJA (Stockholm, 1890). Icebreaker. 815 tons. 11 kts.

OTOS (1936). Icebreaker. 800 tons. 134' 6" x 35' 6" x 15' 9". 1,800 HP. 13 kts.

SAMPO (1898). Icebreaker. 1,850 tons. 202' x 43' x 18' 3". Two screws, 3,000 HP. 12 kts.

SISU (1938). Icebreaker and submarine tender. 2,000 tons. 210' 6" x 46' 6" x 16' 9". Three screws (two stern, one bow). Diesels with electric drive, 4,000 HP. 16 kts. 2 3.9" AA.

SUOMEN JOUTSEN (ex-Oldenburg, 1902). Sail training vessel. 3,200 tons. 316' 3" x 40' 8" x 16' 6". Auxiliary Diesels, 400 HP. 6 kts.

TARMO (ex-Sampo II, 1907). Icebreaker. 2,300 tons. 210' 6" x 47' x 18' 2". 3,850 HP. 12 kts.

VMV-1, 2, 5 (1930-31). Motor patrol boats, built in Germany. 30 tons. 82' x 13' 9" x 3' 3". Gasoline engines, 1,220 HP. 25 kts. 1 20 mm.

VMV-6 (1931), 8-17 (1935). Identical with VMV-1 except semi-Diesel instead of gasoline motors.

VOIMA (1917). Icebreaker. 2,070 tons. 4,100 HP. 13.5 kts.

HUNGARY

RIVER PATROL BOATS

(All Hungarian river patrol vessels so far identified are ex-Austro-Hungarian).

Debrecen Class: BAJA (ex-Barsch), DEBRECEN (ex-Komaron, ex-Lachs), GYÖR (ex-Compo) (1918). 140 tons. 149' 3" x 19' 6" x 3' 3". Geared turbines, 1,200 SHP. Two screws, in tunnels. 15 kts. Armament: 2 70 mm, 2 MG.

SOPRON (ex-Stohr, 1918). Re-engined with Diesels, 1928, 1,600 HP. 18 kts. Otherwise as Debrecen.

SZEGED (ex-Wels, 1915), KECSKEMET (ex-Viza, 1916). 133 tons. 144' 6" x 16' 6" x 3' 3". Geared turbines, 1,100 SHP. Two screws, in tunnels. 15 kts. Armament: 2 70 mm, 2 MG.

OTHER VESSELS

CSO8ANC (1928). Supply ship. 305 tons. 132' x 18' x 4' 6". Diesels, tunnel screws, 180 HP. 8 kts.

HONVED, HUSZAR, TÜZER. Motor launches. 17 tons.

MANCHOUKUO

DESTROYER

HAI WEI (ex-Kasi, 1916). Acquired from Japan in 1937. 755 tons. 275' x 25' x 7' 9". Mixed firing, geared turbines, 16,000 SHP. 31.5 kts. Armament: 3 4.7", 3 MG, 6 18" TT.

RIVER GUNBOATS

A large number of gunboats of recent construction in addition to those below are in service, especially on the Amur River.

CHIN JEN, TING PIEN (Japan, 1935). 290 tons. 195' x 29' x 3'. Diesels, 750 HP. 13 kts. 3 4.7" AA, 3 MG.

SHUN TIEN, YANG MIN (Japan, 1934). 270 tons. 183' x 29' x 3'. Diesels, 680 HP. 12.5 kts. 2 4.7" AA, 3 MG.

LISUI (ex-Vaterland, 1903). Former German gunboat. 350 tons, full load. 164' x 26' 3" x 2' 7". Coal-fired. 7 kts. 2 57 mm, 2 MG.

CHIANG TUNG (ex-Russian?). 250 tons. 150' x 18' 3" x 3'. 4 kts. 1 3", 4 MG.

CHIANG CHING, CHIANG PIEN (ex-Russian, 1897-1900). 360 tons. 164' x 31' 6" x 3' 3". 7 kts. 1 3", 4 MG.

LICHI (ex-Russian, 1895). 362 tons. 158' x 42' 9" x 3' 6". 7 kts. 1 3", 4 MG.

OTHER VESSELS

A surveying vessel, length 56', was launched in Japan in 1935. Name unreported.

CHIMIN (Harbin, 1934). Launch. 20 tons. 65' x 11' x 2'. 8.5 kts. 2 MG.

EMIN, HUIMIN, PUMIN (Japan, 1933). Launches. 15 tons. 56' x 11' x 2' 6". 8.5 kts. 3 MG.

HAIFENG, HALLUNG (Japan, 1933). Patrol vessels, ordinarily under police. 184 tons. 143' x 20' x 5'. 14 kts. 2 3", 2 MG. Strengthened for ice navigation.

HAI HUA, HAI JUI, HAI JUNG, HAI KUANG (Japan, 1933). Patrol craft, ordinarily under police. 45 tons. 12 kts. 1 57 mm, 2 MG.

LIMIN, TATUNG (Japan, 1933). Patrol vessels. 65 tons. 100' x 16' x 2' 6". 10.5 kts. 1 57 mm howitzer, 3 MG.

ROUMANIA

DESTROYERS

REGELE FERDINAND (1928). Built in Italy to Thornycroft design. Displacement: 1,821 tons. 334' 6" x 31' 6" x 11' 6". Geared turbines, 48,000 SHP. 35 kts. Armament: 5 4.7"/50, 1 3" AA, 2 40 mm AA, 2 MG, 6 21" TT in triple mounts, 50 mines. *Regele Ferdinand* may have been sunk in 1942. Sister ship *Regina Maria* was sunk in 1943.

MARASTI (ex-Sparviero, 1919). Begun to Roumanian order, requisitioned by Italy, re-acquired by Roumania in 1920. Displacement: 1,410 tons. 309' 6" p.p. x 31' x 11' 6". Two screws, geared turbines, 45,000 SHP. 34 kts. Armament: 5 4.7", 2 3"/40 AA, 2 MG, 4 17.7" TT in twin mounts; fitted for minelaying. Sister *Marasesti* lost in 1942.

TORPEDO BOATS

SBORUL (ex-Austrian 81T, 1914). 258 tons. 180' 9" x 19' x 5'. 24 kts. Mixed firing. Armament: 2 11-pounders, 4 17.7" TT.

NALUCA (ex-Austrian 82F), SMEUL (ex-83F) (1913-14). 256 tons. No tubes; 2 MG instead. Otherwise as *Sborul*.

SUBMARINES

Some German submarines may have been shipped overland and assembled at Roumanian Black Sea ports. Some of them may have been transferred to the Roumanian flag.

S-1, 2 (both 1941) and probably others, built at Galatz. No particulars available, but are of German type.

DELFINUL (1930). Built in Italy. Displacement: 640 tons, surface; 888, submerged. 225' x 19' 6" x 12'. 14 kts., surface; 9, submerged. Armament: 8 21" TT, 1 4".

DANUBE RIVER MONITORS

8UCOVINA (ex-Austro-Hungarian Sava, 1915). 541 tons. 190' 3" x 33' 8" x 4' 3". 1,600 HP. 12 kts. Armament: 2 4.7"/45 in turret forward, 2 4.7"/10 howitzers, 2 66 mm AA, 2 47 mm AA and 6 MG. Armor: 1.5" belt, 1" deck, 2" turret. Sister *Drava* now in Yugoslav fleet.

BASARABIA (ex-Austro-Hungarian Inn, 1915). 541 tons. 203' 3" x 34' 6" x 4' 3". 1,500 HP. 12 kts. Armament: 2 4.7"/45, 3 4.7"/10 howitzers, 2 47 mm AA, 9 MG. Armor as *Bucovina*. Sister *Vardar* now under Yugoslav flag.

ION C. BRATIANU, LASCAR CARTAGIU, MIHAIL KOGALNICEANU (all 1907); ALEX-ANDRU LAHOVARI (1908). 670 tons. 208' 3" x 33' 9" x 5' 3". 1,800 HP. 13 kts. Coal-fired. Armament: 3 4.7"/35, 1 3" AA, 2 47 mm AA, 2 MG. Armor: 1.5" belt, 1" deck, 2" 3" turret. Except for brief Soviet occupancy of Bessarabia, when large Soviet river gunboats made their appearance in the Danube estuary, these have been the largest warships on the Danube.

ARDEAL (ex-Austro-Hungarian Temes, 1904). 443 tons. 183' 6" x 31' 3" x 3' 9". 1,400 HP. 10 kts. Armament: 2 4.7"/35, 1 3.5" AA, 2 47 mm AA, 4 MG. Armor: 1.5" belt, 1" deck, 1.5"-3" turrets. Sank in 1914, raised and rebuilt in 1916. Resembles Yugoslav *Morava*.

OTHER VESSELS

Seventeen motor launches, ten of 40 tons and 14 kts., and the remainder varying between 30 and 50 tons, were reported under construction in 1942. Some of the former are said to be armored.

Nos. 3 (ex-*Capitan Romano Mihail*), 7 (ex-*Locotenent Calinescu Dimitrie*) (both 1906). Danube patrol. 49 tons. 100' x 13' x 2' 9". 550 HP. 18 kts. 1 47 mm, 1 MG.

AMIRAL MURGESCU (1939), CETETEA ALBA (1940). Minelayers. 812 tons. 252' 4" x 29' 6" x 8' 3". Diesels, 2,100 HP. 16 kts. 2 4" DP, 2 37 mm AA, 2 DCT, 135 mines.

81STRITSA, OLTUL, SIRETUL (1888). River gunboats, possibly no longer in service. 100 tons. 12 kts. 1 6-pounder, 1 1-pounder.

CAPITAN DUMITRESCU (ex-*French Impatiente*, 1916). Gunboat. 384 tons. Approx. 195' x 22' 7" x 7' 9". 900 HP. 15 kts. 2 3.9", 2 MG.

CONSTANTA (1928). Submarine tender. 1,329 tons. 255' 9" x 37' x 13' 3". Diesels, 1,000 HP. 13 kts. 2 4", 2 40 mm.

LOCOTENANT COMANDOR STIHI EUGEN (ex-*French Friponne*, 1916). Gunboat. 443 tons. 199' 9" x 22' 7" x 9' 3". Otherwise as *Capitan Dumitrescu*.

LUCEAFARUL (ex-*Nahim*, 1930). Royal yacht. 2,050 tons. 296' x 36'. Two screws, geared turbines, 4,000 SHP. 17.5 kts. Purchased 1937 by King Carol.

MIRCEA (1938). Sail training vessel. 1,604 tons. 239' 6" x 39' 4" x 16' 6". Auxiliary Diesels, 500 HP. 9.5 kts.

SU8LOCOTENANT GHICULESCU (ex-*French Mignonne*, 1917). Gunboat. 344 tons. 189' 6" x 22' 7" x 7' 9". Otherwise as *Capitan Dumitrescu*.

TAIFUN (1938). Royal yacht. Wood, 38 tons. 54' x 12' 6" x 3'. Two screws, gasoline engines.

VISCOLUL (Vosper, 1939). MTB. 32 tons. 72' x 16' 6" x 3' 9". 3,450 HP. Over 40 kts. 2 21" TT, 2 MG, AA. Others of type lost.

THAILAND

Two light cruisers were laid down for Thailand in Italy in 1939, but were taken over by the Italian navy before completion (if indeed finished). Their Italian names (no Thai names have been reported) are given as *Quarto* and *Brindisi*, under which their particulars may be found.

COAST DEFENSE SHIPS

AYUTHIA (7/21/37), DHONBURI (1/31/38). Built in Japan. Standard Displacement: 2,265 tons. 252' 8" x 47' 3" x 13' 9". Two screws, Diesels, 5,200 HP. 15.5 kts. Armament: 4 8" in twin gunhouses, 4 3" AA, 4 20 mm AA. Both ships crippled in action with French Indo-China squadron in January, 1941. *Dhonburi* taken to Japan for refit in 1942. *Ayuthia*, beached, is probably capable of salvage, although no reports that salvage has been undertaken have yet been received.

RATANAKOSINDRA (1925), SUKHODAYA (1929). Built in England. Displacement: 1,000 tons. 173' x 37' x 10' 9". Two screws, reciprocating engines, 850 HP. 12 kts. Armament: 2 6", 4 3" AA. Considerable armor protection provided.

DESTROYER

PHRA RUANG (ex-*Radiant*, 1916). Former British destroyer of now defunct Admiralty R class, purchased by Thailand in 1920. 1,035 tons. 274' x 27' 4" x 8' 6". Geared turbines, 29,000 SHP. 35 kts. Armament: 3 4", 1 3" AA, 2 20 mm AA, 1 MG, 4 21" TT in twin mounts.

TORPEDO BOATS

PUKET, TRAD (both 1935); CHANDRABURI, PATANI, SURASDRA (all 1936); CHUN-PHORN, RAYONG (both 1937). Built in Italy. 318 tons. 223' x 21' x 7' max. Two screws, geared turbines, 9,000 SHP. 31 kts. Armament: 3 3" AA, 2 20 mm AA, 4 MG, 6 18" TT. *Choburi* and *Songkla* of this type sunk by French Indo-China squadron in 1941; *Trad* beached, but salvaged.

ANTI-SUBMARINE CRAFT

MEKLONG, TACHIN (both 1936). Originally designed as training sloops. Built in Japan. 1,400 tons. 269' x 34' 6" x 10' 4". Reciprocating engines, 2,500 HP. 17 kts. Armament: 4 4.7", 2 20 mm AA, 4 21" TT in pairs.

SUBMARINES

MACHANU, VILUN (both 1936); 8LAJUN8OL, 5INSAMUDAR (both 1937). Built in Japan. Displacement: 370 tons, surface. 167' 4" x 13' 6" x 12'. Diesels, 1,000 HP, and electric motors, 540. 14.5 kts., surface; 8, submerged. Armament: 5 21" TT, 1 MG.

GUNBOATS

SURIYA MONTHON (1908). Built in England. 190 tons. 14.5 kts. 1 6-pounder, 4 MG.

SUG8RI8 (1901). 410 tons. 11.5 kts. 1 4.7", 5 6-pounder, 2 MG.

MONGKUT RAJAKUMARN (ex-*Filipinas*, 1887). 700 tons. 11 kts. 2 4.7", 2 6-pounder, 3 3-pounder.

OTHER VESSELS

Three fishery protection vessels were built at Bangkok in 1936. 50 tons. 72' x 13' x 3' 6". 9 kts. Armament: 1 37 mm.

Nos. 2-5 (1922). MTBs, built by Thornycroft. 11 tons. 55' x 11'. 37 kts. 4 light MG, 2 torpedoes, 2 depth charges.

Nos. 6-8 (1935). Thornycroft-built MTBs. 16 tons. 40 kts. 2 MG, 2 torpedoes, 2 depth charges.

ANGTHONG (ex-*Maha Chakri*, 1918). Transport and submarine tender. 2,760 tons. 335' x 40'. Coal-fired, 3,400 HP. 15 kts.

BANGRADIAN (1936). Minelayer, built in Italy. 368 tons. Diesels, 12 kts. Armament: 2 3" AA. Sister, *Nonsarai*.

CHANG (ex-*Vides Kickbar*, ex-*Buk*, ex-*Lycidas*, 1902). Transport. 850 tons. 176' x 27' 2" x 10'. 780 HP. 9 kts.

CHAO PHYA (ex-*Havant*, 1918). Training ship, former British minesweeper. 710 tons. 220' x 28' 6" x 7' 6". 2,200 HP. 16 kts.

CUONG (ex-*Par-Yom*). Transport. 190 tons. 10 kts.

KANTAN, KLONGYAI (both 1937). Coastal torpedo boats. 110 tons. 131' 6" x 15' 6" x 4'. Geared turbines, 1,000 SHP. 19 kts. Armament: 1 3", 2 20 mm, 2 18" TT. Sister, *Takbai*.

KRAM, KUT, PAI (ex-Chinese lighters, 1902). 440 tons gross. 8 kts. Used on survey duties.

NONSARAI (1936). Minelayer, twin of *Bangradian*.

PANGAN, SICHANG (1937). Japanese-built transports. 650 tons. Diesels.

5AMET (ex-*Pi-Sua-Nam*). Dispatch vessel. 165 tons. 100' x 20' x 8' 6". 210 HP. 9.5 kts.

SUMUI (Japan, 1936). Oiler. 1,854 tons. 240' x 39'. Diesels, 2,150 HP. 12 kts.

TAKBAI (1937). Coastal torpedo boat. Twin of *Kantan*.

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CHILE

BATTLESHIPS

ALMIRANTE LATORRE (ex-Canada, ex-Almirante Latorre, ex-Valparaiso, 1913). Built by Armstrong. Standard Displacement: 28,000 tons. 661' x 103' x 28' 6". Four screws, four sets geared turbines, 37,000 SHP. 22.75 kts. Armament: 10 14" in twin turrets; 14 6"/50; 4 4" AA; 4 3-pounder; 12 MG; 4 21" TT. Armor: 4"-10" belt, 6.5"-9" gunhouses, 11" conning tower. Planes: 1. Catapults: 1. The single most powerful unit of any Latin-American navy, begun in Britain just before the last war, purchased by the Royal Navy and completed as the *Canada*, which served through the war. Repurchased by Chile in 1920. Refitted in England, 1929. Engines converted to oil fuel and other changes made. A sister ship, *Almirante Cochrane*, similarly acquired before completion by Britain, was completed as the aircraft carrier *Eagle*.

OLD CRUISERS

CHACABUCO (Armstrong, 1898). Built on speculation and purchased by Chile on completion in 1902. Standard Displacement: 3,437 tons. 360' p.p. x 46' 6" x 17' max. Coal-burner, two screws, reciprocating engines, 15,500 HP. 24 kts. Armament: 6 6"/50, 5 3", 1 3-pounder, 2 DCT. Armor: 1.75"-4.5" deck, 2.5"-4.5" main gun shields.

GENERAL O'HIGGINS (Armstrong, 1897). Standard Displacement: 7,796 tons. 412' p.p. x 62' 9" x 22' max. Coal-burner, two screws, reciprocating engines, 15,000 HP. 20 kts. Armament: 4 8"/45, 10 6"/40, 13 3" (1 of field gun type), 4 MG, 2 18" TT. Armor: 5"-7" belt, 2" deck, 7.5" port faces to 8" guns.

BLANCO ENCALADA (Armstrong, 1893). Standard Displacement: 3,435 tons. 370' p.p. x 46' 6" x 19' 6" max. Coal-burner, reciprocating engines, 19 kts. Armament: 2 8"/40, 10 6"/40, 5 3", 1 1-pounder, 2 MG. Armor: 4" deck, 6" conning tower, 6" shields to main guns.

COAST DEFENSE SHIP

HUASCAR (Latrd, 1865). Displacement: 1,870 tons. 190' x 30' 6" x 16'. Armament: 2 8"/40, 3 4.7", 4 47 mm. Captured from Peru in 1879.

DESTROYERS

6 *Aldea* Class: ALDEA, HYATT, ORELLA, RIQUELME, SERRANO, VIDELA (all 1928). Built by Thornycroft, England. Standard Displacement: 1,090 tons. 300' x 29' x 12' 8" max. Two screws, geared turbines, 28,000 SHP. 35 kts. Armament: 3 4.7", 1 3" AA, 3 MG, 2 DCT, 6 21" TT in triple mounts.

ALMIRANTE LYNCH (1912), ALMIRANTE CONDELL (1913). Built in England. Standard Displacement: 1,373 tons. 320' x 32' 6" x 11'. Three screws, three sets geared turbines, 30,000 SHP. 31 kts. Armament: 6 4", 4 13 mm AA, 4 21" TT in pairs.

SUBMARINES

CAPITAN O'BRIEN (1928), CAPITAN THOMPSON (1928), ALMIRANTE SIMPSON (1929). Built by Vickers-Armstrong. Displacement: 1,412 tons, surface; 2,020, submerged. 260' x 28' x 13' 6". Diesels, 3,000 HP, and electric motors, 1,300. 15 kts., surface; 9, submerged. 8 21" TT (six bow, two stern), 1 4.7". Like many Chilean vessels, these are named for Chilean naval officers of the 19th century, many of whom were of British birth or extraction. The Capitán O'Briens resemble the British O type.

FRESIA (ex-H-6), GUALCOLDA (ex-H-1), GUALE (ex-H-4), QUIDORA (ex-H-5), RUCUMILLA (ex-H-3), TEGUALDA (ex-H-2) (Fore River, 1915-17). Displacement: 335 tons, surface; 435, submerged. 150' 3" x 15' 9" x 12' 4". Diesels, 480 HP, and electric motors, 620. 10.25

kts., surface; 12.75, submerged. 4 18" TT (bow). Built for Britain in U. S., but U. S. government refused to permit transfer while U. S. was neutral. After U. S. entry into war, they were transferred to Chile in part payment for Chilean battleships acquired by Britain. Of Electric Boat Co. design.

OTHER VESSELS

A coast guard vessel was begun at Valdivia in 1939. 1,026 tons. 180' x 30' x 12'. Reciprocating engines, 900 HP. 12 kts.

Three 500-ton tugs are projected (1943).

A8TAO (ex-Sosua, Oslo, 1912). Transport. Standard Displacement: 690 tons. 225' x 33' 6" x 18'. 1,185 HP. 10 kts.

ANGAMOS (Aalborg, 1941). Transport. Displacement: 3,800 tons. 340' x 46' x 19' 9". Reciprocating engines, 2,200 HP. 12 kts. Coal-burner.

ARAUCANO (Vickers, 1929). Submarine tender. 9,000 tons. 390' x 55' x 16' 6". Coal-burner, geared turbines, 2,400 SHP. 13 kts. 2 4.7", 2 3" AA. Equipment includes seaplane.

CABRALES (1929), COLOCOLO (1930). British-built sea-going tugs. 790 tons. 126' 6" x 27' x 12'. Coal-burning reciprocating engines, 1,050 HP. 11 kts. Have three sisters: *Galvarino*, *Janequeo* and *Sobenes*.

CONDOR (Marseilles, 1899). Lighthouse tender. Iron and wood. 145 tons. 102' x 18' 8" x 9'. Coal-burner. 9 kts.

CONTRAMAESTRE BRITO (1937). Seagoing tug. 320 tons. 100' w.l. x 22' x 13'. Reciprocating engines, 650 HP. 12 kts. Coal-burner. Sister, *Pelantaro*.

ELICURA (ex-Kulik, Helsinki, 1919). Coast guard vessel. 530 tons. 172' 7" x 24' 7" x 11' max. Two screws, coal-burning reciprocating engines, 1,400 HP. 14.5 kts. Armament: 2 3". Sisters: *Leucoton*, *Orompello*.

GALVARINO (1930). British-built tug, sister of *Cabrales*.

GENERAL BAQUEDANO (1898). Sail training vessel. 2,500 tons. 240' x 45' 9" x 18'. Coal-burning reciprocating engines, 1,500 HP. 12 kts. 4 4.7"/40, 6 4-pounder. Not now seagoing.

JANEQUEO (1930). British-built tug, sister of *Cabrales*.

LAUTARO (ex-Priwall, Blohm & Voss, 1920). Sail training vessel. Four-master. 3,185 tons gross. 323' x 47' (draft unreported). Auxiliary Diesels.

LEUCOTON (ex-Norge, 1919). Identical with *Elicura*.

MAIPO (1930). Oiler. British-built. 3,800 tons gross. Two screws, reciprocating engines, 4,800 HP. 15 kts. 2 4.7", 2 MG AA. Sister, *Rancagua*.

MICALVI (ex-Bostonlincks, ex-Bragi, Stettin, 1925). Coast guard vessel. 612 tons gross. 181' 6" x 28' 9" x 11'. 9.5 kts.

OROMPELLO (ex-Bekas, Helsinki, 1919). Twin of *Elicura*.

PELANTARO (ex-Huemul, ex-Vilumilla, 1937). Sea-going tug, sister of *Contramaestre Brito*.

PILOTO SI88ALD (1916). British-built tug. 1,100 tons. 141' 9" x 28' 9" x 11'. 1,200 HP. 11.5 kts. Fitted for salvage.

RANCAGUA (Vickers-Armstrong, 1929). Oiler, twin of *Maipo*.

SOBENES (1929). British-built tug, sister of *Cabrales*.

VIDAL GORMAZ (ex-Cynara, ex-Jason, Southampton, 1913). Surveying vessel, acquired 1940. 670 tons. 190' x 28' 6" x 14'. Coal-burner, 1,200 HP. 13 kts.

YELCHO (1906). Coastguard vessel. 467 tons. 128' x 23' x 9' 6". 12 kts.

ECUADOR

ABDON CALDERON (ex-Cotopaxi, Glasgow, 1884). Lighthouse tender. Iron. 300 tons. 135' x 22' x 9'. 175 HP. 8 kts. 2 small guns.

ATAHUALPA. Trawler.

PRESIDENTE ALFARO (ex-Ava, 1917). Training vessel. British-built ex-yacht, bought 1935. 1,030 tons. 213' w.l. x 31' 3" x 14' 6". Two screws, Diesels, 2,400 HP. 16 kts. Armament: 2 3", several smaller.

EGYPT

SLOOP

EL AMIR FAROUQ (1926). Built in England. 1,441 tons. 247' x 34' x 13' 3". Reciprocating engines, two screws, 2,800 HP. 17 kts. Armament: 1 6-pounder, 4 MG.

OTHER VESSELS

AIDA (1911). Port administration lighthouse tender. 1,428 tons gross. 1,200 HP. 10 kts. In Red Sea.

AL SAREA (1936). Motor patrol vessel. 20 tons. 900 HP. 35 kts. 1 37 mm.

DARFEEL (1925). Motor patrol vessel. 20 tons. 330 HP. 17 kts. 1 37 mm. Twin of *Noor-el-Bahr*.

EL AMIRA FAWZIA (1926). Coastguard administration transport. 2,640 tons. 2,130 HP. 14 kts. 2 3-pounders. Ordinarily employed as coastwise passenger vessel.

EL HOOT. Port administration motor boat. 24 tons. 46' long. 7 kts.

MABAHISS (1930). Research vessel. 61B tons. Coal-burner, 650 HP. 11 kts.

MAHROUSSA (1865). Royal yacht. Iron. 4,561 tons. 477' 10" x 42' 9" x 17' 3". Geared turbines, three screws, 5,500 SHP. 16 kts. Rebuilt and modernized several times.

NAPHTYS (1905). Port administration transport. 620 tons. 7 kts.

NOOR-EL-BAHR (1925). Motor patrol vessel, twin of *Darfeel*.

PHAROS (1929). Port administration salvage tug. 455 tons. 1,000 HP. 12 kts.

QAMAR. Port administration motor launch. 23 tons. 71'. 11 kts.

RAQIB (193B). Motor patrol vessel, built at Alexandria. 66' x 12' 6" x 4'. 540 HP. 15 kts. 1 37 mm.

SAFAGA. Port administration salvage tug. 80 tons.

SOLLUM (ex-British *Syringa*, 1917). Port administration transport. 1,290 tons. 2,500 HP. 16 kts. 1 3-pounder.

TEIR-EL-MINA. Port administration salvage tug. 195 tons.

PARAGUAY

RIVER GUNBOATS

HUMAITA, PARAGUAY (both 1930). Built in Italy. 745 tons. 230' x 35' x 5' 6". Geared turbines, 3,800 HP. 18.5 kts. Armament: 4 4.7", 3 3" AA, 2 40 mm AA; unreported number of mines also carried. Armor: .5" side, .33" deck, .75" conning tower.

TACUARI (1910). Built in England. Wood. 150 tons. 129' 2" p.p. x 24' 10" x 6'. 300 HP. 10 kts. 4 3" (of two different models), 2 37 mm.

CAPITAN CABRAL (1907). Built in Holland. Wood. 180 tons. 9B' 5" p.p. x 23' 6" x 6'. 300 HP. 12.5 kts. 1 3", 2 37 mm.

DISPATCH VESSEL

TENIENTE HERREROS (190B). 100 tons. 12 kts. 1 3", 2 1-pounder, 2 MG.

PERU

CRUISERS

ALMIRANTE GRAU, CORONEL BOLOGNESI (both 1906). Built in England. 370' p.p. x 40' 6" x 14' 9" max. Two screws, reciprocating engines. 28 kts. Armament: 2 6"/50, 6 3", 2 3" AA, 4 20 mm AA, 5 MG, 2 18" TT. Armor: 1.5" deck (amidship), 3" gun shields. Re-engined by Yarrow in 1935, raising speed from original 24 kts. 3" AA and 20 mm AA are Japanese, installed in 1936. *Almirante Grau* is fleet flagship.

DESTROYERS

ALMIRANTE GUISE (ex-*Lennuk*, ex-*Avtroil*, 1915). Built at Tallinn. Sized from Soviet navy by British, 1918, given to Estonia and sold to Peru, 1933. Sister of Soviet *Kallin*. Displacement: 1,350 tons. 344' 6" x 31' 3" x 11' 8". Geared turbines, 32,000 SHP. 30 kts. 5 4"/60, 2 20 mm AA, 3 MG, 9 1B" TT in triple mounts, 80 mines.

ALMIRANTE VILLAR (ex-*Vambola*, ex-*Spartak*, ex-*Mikula Maklet*, 1915). Built at Leningrad, sister of Soviet *Uritskij*; history identical with *Almirante Guise*. Displacement: 1,150 tons. 315' 7" x 30' 6" x 12' 2". Geared turbines, 32,000 SHP. 30 kts. 4 4"/60, 2 20 mm AA, 3 MG, 9 18" TT in triple mounts, 80 mines.

SUBMARINES

R-1, 2 (1926); R-3, 4 (1928). Built by Electric Boat. Displacement: 576 tons, surface; 755, submerged. 186' 3" x 17' 6" x 15'. Diesels, 880 HP, and electric motors, 1,000. 14.5 kts., surface; 9.5, submerged. 4 21" TT (bow), 1 3".

OTHER VESSELS

A number of 90' motor launches of unspecified design have been acquired in the United States.

AMAZONAS (1934). Upper Amazon gunboat. Built in U. S. 250 tons. Diesel, 750 HP. 15 kts. 3 65 mm, 1 47 mm, 2 20 mm AA, 4 MG. Sister, *Loreto*.

AMERICA (1904). Upper Amazon gunboat. 240 tons. 133' x 19' 6" x 4' 6". Coal-fired, 350 HP. 14 kts. 5 47 mm, 2 20 mm AA, 1 MG AA.

CORONEL PORTILLO (ex-*San Pablo*). Upper Amazon gunboat, former river steamer. 49 tons net. 6 kts. 2 47 mm, 2 37 mm, 3 MG AA.

IQUITOS (1875). Upper Amazon gunboat, former river steamer. 50 tons. 7 kts. 2 37 mm, 2 MG AA.

LORETO (1934). Upper Amazon gunboat. Built in U. S., sister of *Amazonas*.

NAPO (1920). Upper Amazon gunboat, built in England. 9B tons. Wood-burner. 250 HP. 12 kts. 4 47 mm, 2 MG AA.

PARINAS (ex-*Sjömand*, 1921). Oilier. 2,820 tons gross. 1,600 HP. 10 kts. Carries 4,300 tons of oil.

RIMAC (ex-*Eten*, ex-*Rhakotis*, 1907). Transport. 6,848 tons gross. Coal-burner, 3,200 HP. 12 kts.

PORTUGAL

DESTROYERS

Three destroyers of 1,400 tons have been authorized, but not yet begun.

LIMA, VOUGA (built in Britain, 1933); DAO (Lisbon, 1934); DOURO, TEJO (both Lisbon, 1935). Standard Displacement: 1,219 tons. 322' x 31' x 11'. Geared turbines, 33,000 SHP. Speed: 36 kts. Armament: 4 4.7"/50, 3 40 mm AA, 8 21" TT in quadruple mounts, 2 DCT; also fitted as minelayers, with stowage for 20 mines. Of British design. Two earlier vessels of same type, built in Lisbon and named *Douro* and *Tejo*, sold to Colombia.

TORPEDO BOAT

TAMEGA (Lisbon, 1922). Of British design. Standard Displacement: 515 tons. 240' x 23' 6" x 7' 8" max. Coal-fired, geared turbines, 11,000 SHP. 27 kts. Armament: 1 4", 2 3", 4 18" TT paired.

ANTI-SUBMARINE CRAFT

When Portugal made Azores bases available to Allied anti-submarine patrols, it was announced that a number (possibly two or four) of British Flower-type corvettes were to be transferred to the Portuguese navy.

Large Sloops

AFONSO DE ALBUQUERQUE, BARTOLOMEU DIAS (both 1934). Built in Britain to modified Italian design. Standard Displacement: 1,783 and 1,788 tons respectively. 326' 9" x 44' 3" x 12' 6". Geared turbines, 8,000 SHP. 21 kts. Armament: 4 4.7"/50, 2 3" AA, 4 40 mm AA, 2 DCT; also fitted as minelayers, with stowage for 40 mines. Carry a seaplane launched overside.

Small Sloops

PEDRO NUNES (1933), JOAO DE LISBOA (ex-*Infanta D. Henrique*, 1933). Built at Lisbon. Standard Displacement: 1,090 and 1,091 tons respectively. 223' p.p. (*Nunes*), 234' 4" p.p. (*Lisboa*) x 32' 9" x 9' 4". Diesels, 2,400 HP. 16.5 kts. Armament: 2 4.7"/50, 4 40 mm AA, 2 DCT.

GONCALO VELHO, GONCALVES ZARCO (both 1932). Built in Britain. Standard Displacement: 950 tons. 268' x 35' 6" x 11' 3". Two screws, geared turbines, 2,000 SHP. 16.5 kts. Armament: 3 4.7"/50, 2 40 mm AA, 2 DCT.

REPUBLICA (ex-*Gladiolus*, 1915). British-built sloop of World War I Flower class type, purchased 1920 and modified for colonial service, 1928-30. Standard Displacement: 948 tons. 267' 9" x 33' 6" x 11' 9" max. Single screw, coal-fired reciprocating engine, 2,350 HP. 16.4 kts. Armament: 2 4", 2 3" AA, 4 3-pounder, 2 MG.

SUBMARINES

Three 900-ton (surface displacement) submarines have been authorized for construction, but are not yet begun.

DELFIN, ESPADARTE, GOLFINHO (all built by Vickers, 1934). Displacement: 800 tons, surface; 1,092, submerged. 227' 2" x 21' 4" x 12' 8". Diesels, 2,300 HP, and electric motors, 1,000. 16.5 kts., surface; 9.25, submerged. Armament: 6 21" TT (four bow, two stern), 1 4", 2 MG.

AUXILIARIES AND SPECIAL TYPES

GUNBOATS

FARO (1927), LAGOS (1930). Built at Lisbon. 295 tons. 130' 6" x 22' x 10' 6". Single screw, 650 HP. 13 kts. Armament: 2 47 mm.

180 (1911), MANDOVI (1917), ZAIRE (ex-*Goa*, 1925), DIU (1929). Built at Lisbon. Standard Displacement: 397 tons. 147' 8" x 27' 3" x 7'. Two screws, coal-fired reciprocating engines, 700 HP. 13 kts. Armament: 4 47 mm (*Mandovi*); 2 3"/40 and 2 47 mm (others).

FISHERY PROTECTION VESSELS

AZEVIA, BICERDA, CORVINA, DOURADA, ESPADILHA, TATAGA (all built at Lisbon, 1941-2). Full load Displacement: 250 tons. 139' 9" x 21' 4" x 7' max. Two screws, Diesels, 2,400 HP. 17 kts. 4 25 mm AA twinned.

LIBADOR (1884). 198 tons. 115' x 20' x 6' 6". Two screws, coal-fired reciprocating engines, 400 HP. 11 kts. 2 47 mm.

OTHER VESSELS

ALMIRANTE SCHULTZ (1929). Lighthouse tender. 520 tons. 131' 3" x 31' x 10' 9". Diesels, 350 HP. 11 kts.

8EIRA (Lisbon, 1910). Surveying vessel. Ex-gunboat. 397 tons. 147' 3" x 27' 3" x 7'. Two screws, coal-fired reciprocating engines, 700 HP. 13 kts. No armament.

8ERRIO (1897). Surveying vessel. Ex-tug. 344 tons. Coal-fired reciprocating engines, 1,070 HP. 10 kts. No armament.

CARVALHO ARAUJO (ex-*Jonquil*, 1915). Surveying vessel. Former British sloop of World War I Flower class type, purchased 1920. Standard Displacement: 900 tons. 262' 6" x 33' x 11'. Reciprocating engines, 2,200 HP. 17 kts. No armament.

DOM JOAO DE CASTRO (1940). Built at Alfeite. Surveying vessel. Standard Displacement: 1,028 tons. 219' 6" x 32' 10" x 9' 6". Reciprocating engines, 1,400 HP. 13.5 kts. No armament in peace; now mounts 1 3".

GIL EANES (ex-*Lahneck*, 1914). Transport. 2,725 tons. 278' x 41' x 16' 10". Single screw, 1,400 HP. 11 kts. 2 47 mm. Employed as fishery service hospital ship.

LIMPOPO (1890). River gunboat. Iron. 195 tons. 124' x 21' x 6' 6". 520 HP. 11 kts. 2 47 mm.

LINCE (Orlando, 1911). Patrol vessel. 77 tons. 88' 6" x 14' x 6'. Two screws, semi-Diesels, 300 HP. 12 kts.

MACAU (1909). River gunboat. 95 tons. 119' 8" x 19' 9" x 2'. 250 HP. 11.8 kts. 2 6-pounder, 3 MG. Stationed at Macao. Belongs to Colonial Marine.

MINEIRO (1892). Mining tender. 76 tons. 58' 6" x 13' 6" x 7'. Two screws, coal-fired, 150 HP. 8 kts.

RIO MINHO (Lisbon, 1904). River gunboat. Full load Displacement: 38 tons. 80' 9" x 13' x 2'. Paddlewheel, 64 HP. 7.5 kts. 1 1-pounder, 1 MG.

SAGRES (ex-*Flores*, ex-*Max*, ex-*Rickmer Rickmers*, Bremerhaven, 1896). Sail training vessel. 3,067 tons. 263' 6" x 40' 4" x 19'. Auxiliary Diesels, 700 HP. 8 kts. Two screws. Armament: 4 57 mm.

SAO BRAZ (1942). Oiler. Built at Alfeite. 7,000 tons gross. 356' 9" x 50' 9" x 18' max. Diesels, 2,150 HP. 12 kts. 1 3.9" AA. A second vessel of this type has been ordered.

TETE (1918). River gunboat. 100 tons. 76' 8" x 20' x 2' 3". Stern wheel, 70 HP. 8 kts. 2 47 mm, 2 MG. On Zambesi River.

VULCANO (1910). Mining tender. 127 tons. 110' x 19' 6" x 7' 3". Two screws, 500 HP. 13 kts. Mounts three instructional TT as well as minelaying gear.

URUGUAY

MISCELLANEOUS

ASPIRANTE (ex-*Exir-Dallen*, ex-*Parodi*, ex-*Trinidad*, ex-*Gelmirez*, 1919). Sail training vessel. 250 tons.

CAPITAN MIRANDA (Cadiz, 1930). Surveying vessel. 516 tons. 148' p.p. x 28' x 10'. Diesel, 500 HP. 10.5 kts.

CORSARIO (1888). Survey craft. 130 tons. 10 kts. 2 37 mm.

DIEZ Y OCHO DE JULIO (ex-*Normandy*, ex-*Lady Nell*, 1879). Sail training vessel. 764 tons. 2 47 mm, 4 MG.

HURACAN (ex-*Fortuna*, 1879). Tug. 197 tons. 380 HP. 12 kts.

PAYSANDU, RIO NEGRO, SALTO (all 1935). Patrol vessels, built in Italy. 180 tons. 137' 6" x 19' x 5' 4". Diesels, 1,000 HP. 17 kts. 2 3", 2 47 mm AA, 2 MG.

URUGUAY (Stettin, 1910). Sloop. 1,150 tons. 278' 9" p.p. x 30' 10" x 12' max. Coal-fired, 8,000 HP. 23 kts. Armament: 2 4.7"/45, 4 3", 6 1-pounder, 4 MG, 2 18" TT. Armor: .67" over boiler and engine spaces.

VANGUARDIA (1908). Tug. 95 tons. 200 HP. 12 kts. 2 37 mm.

ZAPICAN (ex-Atlantico, 1911). Tug. 162 tons. 420 HP. 10 kts.

VENEZUELA

GUNBOATS

GENERAL SOUBLETTE (ex-Milazzo), GENERAL URDANETA (ex-Dardanelli) (both 1925). Purchased from Italian navy in 1938. 615 tons. 204' x 28' 6" x 8' 6". 1,500 HP. 15 kts. Armament: 2 4"/35, 1 3" AA, 2 MG; also fitted for minelaying.

MIRANDA (Clydebank, 1895). Purchased from Spain, 1898. 200 tons. 140' x 17' 6" x 7' 6". Coal-fired, 315 HP. 10 kts. 2 6-pounder, 2 MG.

GENERAL SALOM (ex-Restaurador, ex-Atlanta, 1884). Built as private yacht. Acquired 1900. 750 tons. 240' x 26' x 13' max. Coal-fired, 1,500 HP. 12 kts. 1 3", 4 6-pounder, 1 MG.

OTHER VESSELS

A new tug, 60' x 11' 6" x 4' 6", has been placed in service, name unreported.

Two river gunboats reported purchased in 1939.

ARAGUA (ex-Caroni). Tug. 154 tons. 525 HP. 7 kts. 1 MG.

ARAUCA, CARIBE (ex-Guardacosta III). Motor launches. 30 tons.

JOSE FELIX RIBAS (ex-Zumbador, 1894). Tug. 300 tons. 127' x 23' x 12'. Coal-fired. 8 kts. 2 6-pounder.

LEANDRO (ex-Dr. Brinkley, 1925). Presidential yacht, built in U. S. 320 tons. 149' x 24' 3" x 7' 6". Two screws, Diesels, 1,000 HP. 18 kts. 2 37 mm.

TACHIRA. Motor launch. 30 tons.

OTHER COUNTRIES

ARGENTINA

BATTLESHIPS

RIVADAVIA (Fore River, 8/26/11), MORENO (New York Shipbuilding, 9/23/11). Standard Displacement: 27,720 tons. 585' x 95' x 28' max. Three screws, three sets geared turbines, 45,000 SHP. Converted to oil fuel, 1924-5. 23 kts. Armament: 12 12"/50 in twin turrets; 12 6"/50; 4 3" AA; 4 3-pounder; 6 MG; 2 21" TT. Armor: 8"-11" belt, 3" deck, 9"-12" main turrets, 12" conning tower. Refitted in U. S., 1924-5.

CRUISERS

VEINTICINCO DE MAYO (8/11/29), ALMIRANTE BROWN (8/25/29). Both built by Orlando, Leghorn. Standard Displacement: 6,800 tons. 545' 9" x 58' x 16' 3". Two screws, two sets geared turbines, 85,000 SHP. 32 kts. Armament: 6 7.5"/52 in twin turrets; 12 3.9"/47 AA in twin mounts; 6 40 mm AA; 6 21" TT in triple mounts. No planes carried. Armor: 2.75" side, 1" deck, 2" gunhouses. Topheavy, unsuccessful ships.

LA ARGENTINA (Vickers-Armstrong, Barrow, 3/16/37). Designed as training cruiser. Standard Displacement: 6,000 tons. 500' x 56' x 16' 6" max. Four screws, four sets geared turbines, 60,000 SHP. 31 kts. Armament: 9 6" in triple turrets; 2 4" AA (space for 2 more); 2 3" of field artillery type; 4 3-pounder; 8 2-pounder AA; 6 21" TT in triple mounts. Planes: 2. Catapults: 1. Armor: 3" side, 2" deck, 2" gunhouses.

COAST DEFENSE SHIPS

BELGRANO (ex-Varese, Orlando, Leghorn), PUEYRREDON (ex-Giuseppe Garibaldi, Ansaldo) (both 1897). Obsolete cruisers, refitted for present duties during the 'twenties. Standard Displacement: 6,100 tons. 328' x 59' 8" x 23' 6". Oil-fired reciprocating engines, 13,000 HP. 18 kts. Armament: Belgrano, 2 10", 8 4.7", 4 6-pounder, 2 37 mm AA; Pueyrredon, 2 10", 8 6", 4 6-pounder, 1 37 mm AA. Armor: 3"-6" belt, 1.5"-2" deck, 6" gunhouses.

INDEPENDENCIA (1891), LIBERTAD (ex-Nuevo de Julio, 1890). Built in England. Obsolete cruisers, converted to burn oil and otherwise refitted, 1925-7. Standard Displacement: 2,595 tons. 240' p.p. x 43' x 13' max. Two screws, reciprocating engines, 3,000 HP. 13 kts. Armament: 2 9.4", 4 4.7", 4 3-pounder. Armor: 8" belt, 2" deck, 3" main gunshields.

DESTROYERS

6 Buenos Aires Class: BUENOS AIRES, ENTRE RIOS, MISIONES, SAN JUAN, SAN LUIS, SANTA CRUZ (all built in England, 1937). Standard Displacement: 1,375 tons. 323' x 33' x 8' 6". Geared turbines, 34,000 SHP. 35.5 kts. 4 4.7", 8 smaller guns, 8 21" TT in quadruple mounts. Generally resemble British Gallant class. Five more of type projected on outbreak of war, indefinitely postponed.

3 Mendoza Class: MENDOZA (1928), TUCUMAN (1928), LA RIOJA (1929). Built in England. Standard Displacement: 1,570 tons. 335' x 31' 9" x 12' 6". Geared turbines with single reduction gearing, 42,000 SHP. 36 kts. 5 4.7", 1 3" AA, 2 2-pounder, 6 21" TT in triple mounts.

Cervantes Class: CERVANTES (ex-Churruca, Cadiz, 1925), JUAN DE GARAY (ex-Alcala Galiano, Cartagena, 1925). Purchased from Spain, 1927. Standard Displacement: 1,522 tons. 320' x 31' 9" x 10' 6". Geared turbines, 42,000 SHP. 36 kts. 5 4.7", 1 3" AA, 4 MG, 6 21" TT in triple mounts. A third vessel of type was to be purchased from Spain in 1942.

2 Old Type: CORDOBA (1910), LA PLATA (1911). Built in Germany. Standard Displacement: 1,000 tons. 295' x 29' 6" x 7' 9". Now burn oil. Geared turbines. 3 4", 2 37 mm AA, 1 DCT, 4 21" TT. Now relegated to harbor service.

2 Old Type: CATAMARCA, JUJUY (both 1911). Built in Germany. Standard Displacement: 997 tons. 288' 9" x 28' x 7' 6". Modified to burn oil. Geared turbines. 3 4", 2 37 mm AA, 1 DCT, 4 21" TT. Relegated to harbor duties.

SUBMARINES

SANTA FE (1931), SALTA (1932), SANTIAGO DEL ESTERO (1932). Built by Tosi, Taranto. Displacement: 775 tons, surface; 920, submerged. 226' 4" x 21' x 13'. Diesels, 3,000 HP, and electric motors, 1,400. 17.5 kts., surface; 9, submerged. 8 21" TT, 1 4", 1 37 mm AA. Resemble Italian Mameli type.

OTHER VESSELS

Two sloops similar to King and Murature type listed below were projected in 1943.

In addition to transports listed below, the Argentine government has purchased a number of Italian and German merchantmen interned in Argentine ports.

ALFEREZ MACKINLAY (Netherlands, 1914). Lighthouse inspection vessel. 193' 9" x 28' 3" x 13'. 520 HP. 10 kts.

AZOPARDO (ex-Barstow, Bethlehem, 1919). Tug. 437 tons gross. 164' x 27' 6" x 14'. 1,400 HP. 14 kts.

BAHIA BLANCA (ex-San Luis, 1927). British-built surveying vessel. Displacement: 970 tons. 207' x 33' x 11'. 12 kts. Sister of Comodoro Rivadavia.

BATHURST (ex-M-1, ex-M-48). Minesweeper, purchased from Germany in 1922, one of five such vessels (others: Pinedo, Sequi, Golondrina, Thorne). Displacement: 500 tons. 192' x 24' 3" x 7' 6" max. Altered to burn oil. Single screw, reciprocating engines, 1,850 HP. 16 kts. 3 3" guns.

BOUCHARD (1936). Minesweeper, with her sisters the first Argentine warships to be built in Argentine yards. (Others: Drummond, Granville, Fournier, Comodoro Py, Parker,

Robinson, Seaver, Spiro). Displacement: 450 tons. 180' 6" x 23' 6" x 6' 6". Diesels, 2,000 HP. 15 kts. 2 3.9"/47, 2 40 mm AA, DCs.

CHACO (ex-*Rio Claro*, 1923). Submarine tender, built at Danzig. Displacement: 2,100 tons. 273' x 37' x 24'. 1,500 HP. 11 kts. *Pampa* a sister.

COMODORO PY (1938). Minesweeper. Sister of *Bouchard*.

COMODORO RIVADAVIA (ex-*San Juan*, 1927). British-built surveying vessel, identical with *Bahia Blanca*.

DRUMMOND (1936). Minesweeper. Identical with *Bouchard*.

FOURNIER (1939). Minesweeper. Sister of *Bouchard*.

GOLONDRINA (ex-*M-10*, ex-*M-105*). Ex-German minesweeper identical with *Bathurst*. Purchased 1922 and employed as Admiralty yacht.

GRANVILLE (1937). Minesweeper, sister of *Bouchard*.

KING (1941). Sloop. She and sister *Murature* are largest naval vessels ever built in Argentina. Displacement: 800 tons (max.). 252' 8" x 29' x 8' 8". Diesels, 4,000 HP. 16 kts. To be employed on training duties.

MATACO (1928). British-built tug, sister, *Taba*. 339 tons gross. 137' w.l. x 28' 6" x 13' 6". 1,100 HP. 12 kts.

MINISTRO EZCURRA (1914). British-built oiler. Displacement: 2,600 tons. 250' x 40' x 18' 9". 1,250 HP. 10.5 kts.

MURATURE (1941). Sloop. Twin of *King*.

ONA (1913). British-built tug; sister, *Querandi*. 345 tons gross. 130' x 28' x 12'. 1,200 HP. 12 kts.

PAMPA (ex-*Rio Bueno*, 1923). Danzig-built transport. Sister of *Chaco*.

PARANA (1908). She and *Rosario* are British-built sisters, river monitors. Standard Displacement: 1,055 tons. 240' x 32' 8" x 7' 5". Coal-burner, two screws, reciprocating engines, 1,600 HP. 15 kts. Armament: 2 6" howitzers, 6 3", 2 37 mm AA, 4 MG. Armor: 3" belt, 1"-1.5" deck, 3" conning tower.

PARKER (1937). Minesweeper, sister of *Bouchard*.

PATAGONIA (1925). German-built transport. 1,350 tons. 193' 6" x 27' x 13'. 440 HP. 9.5 kts

PINEDO (ex-*M-6*, ex-*M-79*). Ex-German minesweeper, purchased, 1922. Sister of *Bathurst*.

PRESIDENTE SARMIENTE (Birkenhead, 1898). Presidential yacht, former training vessel. 2,850 tons. 251' 5" x 43' 3" x 23' 3". Coal-burner, reciprocating engines. 3 4.7"/45; 1 4"; 2 6-pounder; 2 3-pounder; 3 TT.

PUNTA ALTA (1937). Oiler. Displacement: 1,600 tons. 200' x 33' 6" x 11' 6".

QUERANDI (1913). British-built tug, sister of *Ona*.

ROBINSON (1938). Minesweeper, twin of *Bouchard*.

ROSARIO (1908). River monitor, sister of *Parana*.

SEEVER (1938). Minesweeper, sister of *Bouchard*.

SEQUI (ex-*M-8*, ex-*M-90*). Former German minesweeper, purchased 1922. Employed as diving tender. Sister of *Bathurst*.

SPIRO (1937). Minesweeper, identical with *Bouchard*.

THORNE (ex-*M-9*, ex-*M-101*). Minesweeper, purchased from Germany, 1922. Twin of *Bathurst*.

TOBA (1927). Tug, built in Britain. Sister of *Mataco*.

USHUAIA (1939). Transport. Full load displacement: 1,275 tons. 211' x 31' 6" x 11' 6". Diesels, 1,200 HP. 12 kts.

DENMARK (Occupied by Germany)

Most Danish fleet units were reported taken over by Germany in 1941-2, in most cases for conversion into *flak* ships. However, several of the units so named proved to have been among the vessels (most of whose identities are not known) scuttled by the Danes at Copenhagen, Aug. 29, 1943. Hence no attempt is made to determine which ships are now in German service. They are generally listed as of the eve of the Nazi occupation of Denmark. Except as indicated, all Danish naval units were built at the Royal Dockyard, Copenhagen.

COAST DEFENSE SHIPS

NIELS IUEL (1918). Standard Displacement: 3,800 tons. 295' 3" x 53' 6" x 15' 9". Mixed-firing, two screws, reciprocating engines, 6,000 SHP. 16 kts. Armament: 10 5.9"/45, 2 6-pounder, 10 20 mm AA, 14 MG, 2 18" TT. Armor: 6"-7.75" side, 2.25"-2.5" deck, 1.75" gunshields. Scuttled at Copenhagen, Aug. 29, 1943; raised by Germans, October, 1943.

PEDER SKRAM (1908). Standard Displacement: 3,500 tons. 275' p.p. x 51' x 16' 6". Coal-fired reciprocating engines, two screws, 5,400 HP. 16 kts. Armament: 2 9.4"/43, 4 5.9"/50, 8 3", 2 1-pounder, 4 20 mm AA, 2 MG, 4 18" TT. Armor: 6"-7" side, 2.25"-2.5" deck, 7" turrets.

DESTROYERS S CLASS

NAJADEN, NYMPHEN (both 1939). Displacement: 710 tons. 279' p.p. x 27' 4" x 8'. Two screws, geared turbines, 21,000 SHP. 35 kts. Armament: 2 4.7", 2 40 mm AA, 3 20 mm, 6 21" TT in triple mounts, 60 mines.

TORPEDO BOATS

(Reports that many Danish torpedo boats have been taken over by Germany are especially persistent.)

T-4 Class: GLENTEN (*T-4*, 1933), HÖGEN (*T-5*, 1933), ÖRNEN (*T-6*, 1934). Similar to *T-1* type except 6 18" TT in twin mounts, 2 DCT and fitted for minelaying.

T-1 Class: DRAGEN (*T-1*, 1929), HVALEN (*T-2*, 1930), LAXEN (*T-3*, 1930). 390 tons. 198' 9" x 19' 6" x 7' 9". Geared turbines, 6,000 SHP. 27.5 kts. 2 3.5", 2 20 mm AA, 2 MG AA, 8 18" TT (two triple and one twin mount).

R Class: NORDKAPAREN (*R-3*, 1918), HAVKATTEN (*R-4*, 1919), SAELEN (*R-6*, 1919). Similar to *S* class except armament, which is 2 6-pounder AA, 2 18" TT, 2 DCT. No mine-sweeping gear. *Makrelen* (*R-2*), among vessels scuttled by Danes at Copenhagen, Aug. 29, 1943, broke in half while being refloated by the Germans in October.

S Class: HÄVORNEN (*S-5*, ex-*Havhesten*), NARHVALEN (*S-6*), SÖHUNDEN (*S-4*), SÖRIDDEREN (*S-3*, ex-*Sölöven*), SPRINGAREN (*S-1*), STÖREN (*S-2*) (1916-17). 110 tons. 126' 4" x 14' x 8' 9" max. Coal-fired reciprocating engines, 2,000 HP. 24.3 kts. Armament: 2 6-pounder AA, 1 18" TT; minesweeping gear replaces original second 18" TT on after deck.

HVALROSSEN (*P-1*, 1913). 169 tons. 148' 3" x 17' x 7'. Coal-fired reciprocating engines, 3,500 HP. 26 kts. 1 3", 1 MG, 4 18" TT (one pair and two singles).

SUBMARINES

H Class: HAVFRUEN (1937), HAVMANDEN (1937), HAVKALEN (1938), HAVHESTEN (1939). Displacement: 314 tons, surface; 407, submerged. 155' 9" x 14' 4" x 9' 4". Diesels, 1,200 HP, and electric motors, 450. 15 kts., surface; 7, submerged. 5 18" TT (three bow, two stern), 2 40 mm AA, 2 MG AA.

D Class: DAPHNE (1925), DRYADEN (1926). Displacement: 301 tons, surface; 381, submerged. 160' 9" x 16' x 8' 4". Diesels, 900 HP, and electric motors, 400. 13.5 kts., surface; 6.5, submerged. 6 18" TT (four bow, two stern), 1 3", 1 20 mm AA.

O Class: ROTA (1918), BELLONA (1919), FLORA (1920). Displacement: 300 tons, surface; 369, submerged. 155' 9" x 14' 6" x 9' 6". Diesels, 900 HP, and electric motors, 640. 14 kts., surface; 8, submerged. 4 18" TT (three bow, one stern; *Rota* has additional TT on deck), 1 6-pounder AA.

B Class: RAN (1915), TRITON (1915), GALATHEA (1916). Holland (Electric Boat) type. Displacement: 173 tons, surface; 237, submerged. 133' 3" x 12' 3" x 8'. Diesels, 450 HP, and electric motors, 340. 13 kts., surface; 6.5, submerged. 3 18" TT (two bow, one stern), 1 6-pounder AA.

OTHER VESSELS

BESKYTTEREN (1900). Fishery patrol vessel and aircraft tender. 415 tons. 142' 5" x 24' 8" x 12' 5". 620 HP. 11 kts. 1 6-pounder, 2 MG AA. Builder unreported.

DAMPBAAD A (ex-Minekran, 1896). Harbor tender. 96 tons. 7 kts. Builder unknown.

DANNEBROG (1931). Royal yacht. 1,130 tons. 246' x 34' x 11' 10". Diesels, 1,800 HP. 14 kts. Armament: 2 37 mm.

FREJA (1938). Surveying vessel. 322 tons. 134' x 25' 3" x 7' 3". 300 HP. 10.5 kts. Armament (not mounted on surveying cruises): 2 3", 2 20 mm AA.

HEJMDAL (1935). Surveying vessel. 705 tons. 175' x 30' x 12'. 800 HP. 13 kts. 2 3", 4 20 mm AA, 2 MG AA.

HENRIK GERNER (1927). Submarine tender. 463 tons. 160' x 27' x 9' 3". Diesels, 900 HP. 13.2 kts. 2 3", 2 MG AA; also carries mines.

HVIDBJÖRNEN (1928). Fishery patrol vessel. 1,050 tons. 196' 9" x 32' x 13'. 1,800 HP. 14.5 kts. 2 3.5".

INGOLF (1933). Fishery patrol vessel. 1,180 tons. 226' x 35' 6" x 16' max. 2,935 HP. 16.5 kts. 2 4.7", 2 6-pounder, 2 20 mm AA, 2 MG AA.

ISLANDS FALK (Elsinore, 1906). Fishery patrol vessel. 730 tons. 1,100 HP. 11 kts. 2 3", 2 3-pounder.

KVINTUS (1917). Mining tender. 186 tons. 88' 5" p.p. x 20' 7" x 6' 6". Bergsund surface-ignition heavy oil motors, electric drive, 300 HP. 8 kts. 2 1-pounder; 60 mines. Sister, *Sixtus*.

LAALAND, LOUGEN (1941). Mining tenders. 260 tons. Length, 101' 6". 11 kts. 2 MG.

LINDORMEN (1940). Minelayer. 614 tons. 167' 3" p.p. x 29' x 8'. 1,200 HP. 14 kts. 2 3", 3 20 mm AA, 150 mines.

LOSSEN (1910). Minelayer. 640 tons. Coal-fired, 900 HP. 12 kts. 2 3", 2 MG AA, 175 mines.

MAAGEN (Frederiksfund, 1930). Fishery patrol vessel. Wood. 90 tons. 100 HP. 8 kts. 1 37 mm.

MS-1-10 (1941). Minesweepers. Various builders. 74 tons. 78' 9" x 21' x 5'. 11 kts. 1 20 mm, 2 MG.

SIXTUS (1919). Mining tender. Sister of *Kvintus*.

SÖLÖVEN (1938), SÖBJÖRNEN (1939), SÖULVEN (1939). Minesweepers. 270 tons. 176' 6" x 20' 9" x 6' 6". Geared turbine, 2,200 SHP. 19 kts. 2 3", 4 20 mm AA, 4 MG AA, 2 DCT. Also fitted for minelaying. Five others were under construction at the Royal Dockyard, Copenhagen, at the time of the German occupation.

TERNEN (Faaborg, 1937). Surveying tender. Wood. 82 tons. 110 HP. 8 kts. 1 37 mm.

EIRE

FORT RANNOCK. Fishery protection vessel.

M-1, 2 (1939) and several others acquired during 1940. MTBs of standard Thornycroft (British Nos. 24, 25) type.

MUIRCHU (ex-*Helga*, 1908). Fishery protection vessel. 323 tons gross. 155' 6" x 24' 6".

ICELAND (Occupied by Allied Forces)

FISHERY PROTECTION VESSELS

ESJA (Aalborg, 1939). 1,347 tons gross. 214' x 35' 6". Diesels, two screws.

ODINN (1938). 72 tons. 11 kts. 1 47 mm.

AEGIR (Copenhagen, 1929). 497 tons. Length, 187'. Diesels, 14 kts. 1 57 mm.

THOR (ex-Senator *Schäfer*, 1922). Ex-German trawler. 226 tons gross. 128' x 24' 3" x 9'. Reciprocating engines, 450 HP. 11 kts. 1 57 mm.

SPAIN

HEAVY CRUISER

CANARIAS (Ferrol, 5/28/31). British-designed. Standard Displacement: 10,000 tons. 636' x 64' x 17' 6". Geared turbines, 90,000 SHP. 33 kts. Armament: 8 8" in twin turrets, 6 4.7" AA, 8 40 mm AA, 12 21" TT in triple mounts. Armor: 1.5"-2" side, 1" turrets. Planes: 2. Catapults: 1.

LIGHT CRUISERS

GALICIA (ex-*Libertad*, ex-*Principe Alfonso*, 1/3/25), ALMIRANTE CERVERA (10/16/25), MIGUEL DE CERVANTES (5/19/28). All built at Ferrol to British designs. All rebuilt or to be rebuilt. New specifications: Standard Displacement, 7,475 tons. 579' 6" x 54' x 16' 6". Four screws, geared turbines, 80,000 SHP. 33 kts. Armament: 8 6"/50 in twin gunhouses, 12 3.5" AA, 16 37 mm AA, 6 21" TT in triple turrets. Armor: 1.5"-3" side 1" deck. Planes: 1 or 2. Catapults: 1.

MENDEZ NUÑEZ (Ferrol, 3/3/23). To be rebuilt in 1944. Pre-reconstruction specifications. Standard Displacement: 4,500 tons. 462' x 46' x 14' 4". Four screws, geared turbines, 45,000 SHP. 29 kts. Armament: 6 6"/50, 10 37 mm AA, 4 MG, 12 21" TT in triple mounts. Armor: 1.25"-3" side, 1" deck.

NAVARRA (ex-*Republica*, ex-*Reina Victoria Eugenia*, Ferrol, 4/21/20). Rebuilt, 1937-38. Standard Displacement: 4,850 tons. 462' x 50' x 15' 9". Two screws, geared turbines, 25,500 SHP. 25.5 kts. Armament: 6 6"/50, 4 3.4" AA, 4 MG. Armor: 1.25"-3" side, 3" deck.

DESTROYERS

13 *Churrucá* Class: SANCHEZ BARCAITZEGUI (1926), JOSÉ LUIS DIEZ (1928), CHURRUCÁ (1929), LEPANTO (1929), ALCALÁ GALLIANO (1930), ALMIRANTE ANTEQUERA (1930), ALMIRANTE VALDES (1930), ALMIRANTE MIRANDA (1931), GRAVINA (1931), ESCANO (1933), CISCAR (1933), JORGE JUAN (1933), ULLOA (1933). All built at Cartagena. Standard Displacement: 1,536 tons. 333' x 31' 9" x 17' max. Two screws, geared turbines, 42,000 SHP. 36 kts. Armament: 5 4.7", 4 37 mm AA, 4 20 mm AA, 2 DCT, 6 21" TT in triple mounts. *Churrucá* was torpedoed during the Spanish Civil War but was repaired, and *Ciscar* was sunk, but salvaged. Another ship of the same class, *Almirante Juan Fernandez*, was also lost in the Civil War, but has not been recovered. Two other vessels of this type, *Alcalá Galiana* and *Churrucá*, were sold to Argentina, and the present vessels of those names built to replace them. Two others, *Alava* and *Liniers*, were laid down in 1936, and abandoned in 1940, incomplete (their construction had been delayed by the civil war), as obsolescent. (Four Italian destroyers, handed over to France during the civil war, have since been scrapped as worn out and not worth reconstructing).

ALSEDO (1922), LAZAGA (ex-*Juan Lazaga*, 1923), VELASCO (1923). Displacement: 1,145 tons. 283' x 27' x 15' max. Geared turbines, 33,000 SHP. 34 kts. Armament: 3 4"/40, 4 20 mm AA, 4 21" TT in twin mounts.

SLOOP

CALVO SOTELO (ex-*Zacatecas*, Cadiz, 1934). Displacement: 1,600 tons. 282' x 40' x 10'. Two screws, geared turbines, 6,500 SHP. 20 kts. Armament: 4 4", 2 3" AA, 3 20 mm AA. Built for Mexico, but purchased by Spain before completion. Renamed by Franco for the fascist thug whose murder was one of the signals for the Spanish civil war.

CANALEJAS (ex-*José Canalejas*, 1922), CANOVAS DEL CASTILLO (ex-*Antonio Canovas del Castillo*, 1922), DATO (ex-*Eduardo Data*, 1923). Displacement: 1,314 tons. 251' 4" x 33' 9" x 11' 9". Reciprocating engines, 1,700 HP. 15 kts. Burn coal or oil. Armament: 4 4.1" (*Canalejas*), 4 4" (others); 2 3" AA, some smaller.

SUBMARINES

D-1-3. Begun at Cartagena before civil war, resumed afterward. No launch dates reported, however, and may have been delayed again by material shortages. Design specifications: Displacement, 1,050 tons, surface; 1,375, submerged. 275' 6" x 21' 9" x 13' 6". Diesels, 5,000

HP, and electric motors, 1,350. 20.5 kts., surface; 9.5, submerged. Armament: 6 21" TT (four bow, two stern), 1 4.7", 4 37 mm AA. Note unusually heavy AA armament.

ISAAC PERAL (ex-C-1, 1927); C-2 (1928); MOLA (ex-C-3), C-4, SANJURJO (ex-C-5) (all 1929). Electric Boat type, built at Cartagena. Displacement: 842 tons, surface; 1,290, submerged. 247' x 29' 9" x 13' 6". Diesels, 2,000 HP, and electric motors, unreported. 16 kts., surface; 8.5, submerged. Armament: 6 21" TT, 1 3" AA. *Mo/o* sunk at Malaga, 1936, but salvaged. C-6 lost in civil war.

B-2 (1922). Electric Boat type, built at Cartagena. Displacement: 491 tons, surface; 715, submerged. 210' 4" x 18' 4" x 11' 3". Diesels, 400 HP, and electric motors, 850. 16 kts., surface; 10, submerged. Armament: 4 18" TT, 1 3".

AUXILIARIES AND SPECIAL TYPES

MINELAYERS

EOLO (1939), TRITÓN (1940). Displacement: 1,500 tons. 278' x 38' 6" x 10'. 18.5 kts. Armament: 4 4", 4 40 mm AA, 4 13 mm AA; capacity, 70 mines.

JUPITER (1935), VULCANO (1935), MARTE (1936), NEPTUNO (1937). Displacement: 2,100 tons. 315' x 41' 6" x 11' 6". Geared turbines, 5,000 SHP. 18.5 kts. Armament: 4 4.7"; 2 3.4" AA (*Vulcano*), 2 3" AA (others); 4 20 mm AA; 2 DCT; capacity, 264 mines.

6 *Ex-torpedo boats*: 7, 9, 14, 16, 17, 19 (all 1914-18). Displacement: 177 tons. 164' x 16' 6" x 6' 4" max. Coal-burners, geared turbines (three screws in 7, two in others), 3,750 SHP. 26 kts. Armament: 3 3-pounder; 3 18" TT (possibly removed).

COASTGUARD VESSELS

All the following are *ex-trawlers*, purchased in Britain and France in 1922.

ARCILA (ex-*William Dook*), XAUEN (ex-*Henry Cromwell*) (both 1918). 750 tons. 148' x 23' 9" x 15' 9". Coal-burners, 500 HP. 10 kts. Armament: 2 3".

UAD KERT (ex-*Rother*, ex-*Anthony Aslett*, 1917). 640 tons. 130' p.p. x 23' 6" x 15' 9". Coal-burner, 500 HP. 9.5 kts. Armament: 2 3".

UAD MARTIN (ex-*Erne*, ex-*John Chivers*, 1917). 600 tons. 125' p.p. x 23' 6" x 15' 6". Coal-burner, 500 HP. 9.5 kts. Armament: 2 3".

ALCÁZAR (ex-*Rengagü*), TETUAN (ex-*Groggnord*). 400 tons. 134' 6" x 23' 6" x 11' 9". Coal-burners, 425 HP. 10 kts. Armament: 1 3", 2 3-pounder.

OTHER VESSELS

Two Diesel-powered (300 HP, 9 kts.) oilers of 500 tons deadweight (138' x 25', draft unreported) were launched at Santander in 1939.

Several MTBs similar to *Villa Felguera* were completed at Gijon in 1942-3.

ARTABRO (1935). Surveying vessel. 770 tons. 187' x 34' 6" x 8' 3". Diesels, 700 HP. 9 kts. Seaplane carried.

BOLIDO. Motor launch. 46 tons. Diesel-powered. 1 20 mm AA, 1 8 mm. Sisters, *Oviedo*, *Requeté*, *Toledo*.

CABO FRADERA. River Mino patrol. 44 tons. 74' 5" x 14' 6" x 4' 3". 120 HP. 10 kts. Armament: 1 42 mm.

CANDIDO PEREZ. Italian-type launch. 27 tons.

CARTAGENERO (ex-*HS-78*, 1918). British-built seagoing tug. 300 tons. 83' 6" x 21' 6" x 10' 6". 420 HP. 10 kts. Sisters, *Ferralano*, *Gaditono*.

DAR I, II. Motor launches of Italian type. 16 tons. Possibly ex-*Mas-435*, 436.

ESTELLA. Training schooner.

FERROLANO (ex-*HS-80*, 1918), GADITANO (ex-*HS-82*, 1918). British-built sea-going tugs, twins of *Cartagenero*.

GALATEA (ex-*Clarastella*, 1896). Sail training vessel. 2,713 tons. 243' x 38' 9" x 17' 9". Auxiliary Diesels, 8.5 kts. Armament: 4 6-pounder.

GALICIA (ex-*St. Clement*, 1918). British-built sea-going tug. 820 tons. 135' 6" x 29' x 14' 6" max. Coal-burner, 1,250 HP. 12 kts. Armament: 1 3".

JUAN SEBASTIAN DE ELCANO (1927). Sail training vessel. 308' 6" x 43' x 23' max. Auxiliary Diesel, 9.5 kts. Armament: 4 6-pounder.

MALASPINA (ex-*Bausá*, 1935). Surveying vessel. 1,200 tons. 850 HP. 12.5 kts. Armament: 1 3-pounder. Seaplane carried.

OVIDO. Motor launch, sister of *Bolido*.

PLUTÓN (ex-*Campilo*, 1931). Oiler. 4,550 tons, light. 342' 6" x 53' 9" x 19' 6". Diesels, 2,530 HP. 13.5 kts.

REQUETÉ, TOLEDO. Motor launches, sisters of *Bolido*.

VILLA FELGUERA (1942). Motor launch.

SWEDEN

CRUISERS

4 Göta Lejon Class

| Name | Builder | Keel Laid | Launched | Comp. |
|------------|---------|-----------|----------|---------|
| GÖTA LEJON | | | | 1943(?) |
| TRE KRONOR | | | | 1943(?) |
| 2 SHIPS | | | | |

Standard Displacement: 7,000 tons.

Dimensions unreported.

Propulsion: Geared turbines.

Speed: 30 kts.

Armament: 9 6"/50 in triple turrets; 8 Bofors 40 mm AC and numerous smaller AA, including the distinctive Bofors 25 mm AC. 6 21" TT in triple mounts. Armor said to be unusually heavy for a vessel of this size. Planes: at least 3. Catapults: 1.

The *Göta Lejon* and *Tre Kronor* are somewhere between keel laying and launching, construction having been temporarily suspended in favor of smaller vessels.

1 Gotland Class

| Name | Builder | Keel Laid | Launched | Comp. |
|---------|------------|-----------|----------|-------|
| GOTLAND | Götaverken | 12/27 | 9/14/33 | 12/34 |

Standard Displacement: 4,800 tons.

Dimensions: 437' 6" x 50' 6" x 18' max.

Propulsion: two screws, two sets geared turbines, 33,000 SHP. Speed: 27 kts.

Armament: as of 1941, 6 6"/50 in two twin and two single gunhouses; main armament very possibly since increased by at least 2 6"; 4 3" AA; numerous smaller AA, probably including Bofors 40 mm AC, as well as 25 mm AC. 6 21" TT in triple mounts. Fitted as mine layer. Armor: 1.12"-2" side; 1.12"-2" turrets; 2" decks. Planes: unreported. Catapults: unreported.

Until 1943, the *Gotland* was the world's first (and probably only, as the existence of similar Japanese vessels has never been proved) combination cruiser and aircraft carrier. As such, she had a capacity of 11 seaplanes (only eight were normally carried). The planes were launched by a single large compressed air catapult on her afterdeck; to increase speed of launching, the planes were mounted on trolleys which enabled them to roll up onto the catapult track under their own power. However, in 1943, owing to the impossibility of obtaining sufficiently modern seaplanes abroad or developing them at home, Sweden decided to convert the *Gotland* to a straight cruiser. This probably means the mounting of additional armament aft as well as relocation of the catapult which, of course, will be retained for a smaller complement of scouting craft. It should be noted that, as a combination vessel, the *Gotland's* capacity was not very much more than that of the American *Brooklyn*s and similar hangar-sterned vessels having a capacity of eight planes without sacrificing stern armament as the *Gotland*.

1 Fylgia Class

| Name | Builder | Keel Laid | Launched | Comp. |
|--------|---------------------|-----------|----------|-------|
| FYLGIA | Bergsund, Stockholm | 1903 | 12/20/05 | 1907 |

Standard Displacement: 4,700 tons. Dimensions: 377' 8" w.l. x 48' 6" x 20' 8" max.

Propulsion: Two screws, two sets reciprocating engines, 13,000 SHP. Speed: 21.5 kts.

Armament: 8 6"/50 in twin turrets; 4 57 mm, 4 40 mm Bofors AC and other AA. 2 21" TT in single mounts. Armor: 4" belt; 5" turret faces; 2" decks. Planes: 0. Catapults: 0.

The *Fylgia* was completely refitted and rebuilt in 1939-41. Despite her age and slow speed, she is still rated a cruiser.

DESTROYERS

2 or more Upland Class

ÖLAND (1943), UPLAND (1943). Standard Displacement: 1,800 tons. Dimensions unreported. Propulsion and speed unreported. Armament: 5 4.7" DP; several smaller AA; 6 21" TT in triple mounts.

The Uplands are Sweden's largest destroyers. Reports early in 1943 said that a total of 18 of the type was projected. It is doubtful that such a program could be completed by Sweden before 1946.

4 Sundevall Class

VISBY (1942), SUNDEVALL (1942), KALMAR (1943), HÄLSINGBORG (1943). Standard Displacement: 1,145 tons. Dimensions 320' x 29' 6" x 9'. Propulsion: Geared turbines, 36,000 SHP. Speed: 39 kts. Armament: 3 4.7", 4 40 mm AA, 4 20 mm AA; 6 21" TT in triple mounts; possibly also carry mines.

The Sundevalls, of which several more have probably been laid down, although no additional names have been released, are Sweden's latest and heaviest destroyers. They are understood to be enlarged Stockholms

4 Mjölner Class

MIÖLNER (1942), MUNIN (1942), MODE (1942), MAGNE (1942). Standard Displacement: 635 tons. Dimensions: 256' x 26' 3" x 7' 6". Propulsion: Geared turbines. Speed: 30 kts. Armament: 3 4.1" AA; 2 40 mm AA; 2 25 mm AA; 3 21" TT in triple mount.

The Mjölners resemble the Italian-built *Psilanders*.

6 Stockholm Class

STOCKHOLM (1936), GÖTEBORG (1937), MALMO (1938), KARLSKRONA (1939), NORRKÖPING (1940), GÄVLE (1940). Standard Displacement: 1,040 tons. Dimensions: 310' 6" x 29' 6" x 9'. Propulsion: Geared turbines, 32,000 SHP. Speed: 39 kts. Armament: 3 4.7", 6 25 mm AC AA, also machine guns and possibly 40 mm AC AA. 6 21" TT in triple mounts. Fitted for minelaying.

The *Göteborg* was wrecked in September, 1941, along with two other destroyers, in the explosion of a torpedo as it was being loaded aboard. It was salvaged and rebuilt in 1943.

4 Ehrensköld Class

EHRENSKÖLD (1926), NORDENSKJÖLD (1926), CLÄS HORN (1931), CLÄS UGGLA (1931). Standard Displacement: 940 tons. Dimensions: 293' w.l. x 29' 3" x 12' 6" max. Propulsion: geared turbines, 24,000 SHP. Speed: 35 kts. Armament: 3 4.7", 6 25 mm AC AA. 6 21" TT in triple mounts. Fitted for minelaying.

Cläs Horn and *Cläs Ugglä* were also wrecked in the accident which crippled the *Göteborg* but, like the latter, have been salvaged.

2 Psilander Class

PSILANDER (ex-Giovanni Nicotera, 1926), PUKE (ex-Bettina Ricasoli, 1926). Standard Displacement: 935 tons. Dimensions: 275' 6" x 27' x 9' 9". Propulsion: Geared turbines,

36,000 SHP. Speed: 35 kts. Armament: 4 4.7", 2 Bofors 40 mm AC AA, machine guns. 4 21" TT in pairs.

Sweden acquired the *Psilander* and *Puke* by purchase from the Italian Navy in 1940 during one of the waves of Russofear which sweeps Stockholm every now and then.

TORPEDO BOATS

2 Romulus Class

ROMULUS (ex-Astare, 1934), REMUS (ex-Spica, 1934). Standard Displacement: 638 tons. Dimensions: 263' 6" x 27' x 7' 6". Propulsion: Geared turbines, 19,000 SHP. Speed: 34 kts. Armament: 3 3.9"/47; 6 37 mm AA (possibly replaced by guns of standard Swedish caliber, such as Bofors 40 mm), machine guns. 4 18" TT in one pair and two singles.

The *Romulus* and *Remus* were acquired in 1940 under similar circumstances to the *Psilander* and *Puke*.

2 Wrangel Class

WRANGEL (1917), WACHTMEISTER (1917). Standard Displacement: 465 tons. Dimensions: 232' 9" x 22' x 9' 3" max. Propulsion: Geared turbines, 13,000 SHP. Speed: 34 kts. Armament: 4 3", 1 25 mm AA, machine guns (AA armament possibly strengthened). 4 18" TT in pairs.

4 Hugin Class

RAGNAR (1908), SIGURD (1908), VIDAR (1909), HUGIN (1911). Standard Displacement: 360 tons. Dimensions: 215' 9" (*Hugin*), 215' 6" (others) x 20' 8" x 8' 6" (*Hugin*), 9' (others) max. Propulsion: Geared turbines, 10,000 SHP (*Hugin*), 8,000 (others). Speed: 31 kts. (*Hugin*), 30.5 kts. (others). Armament: 4 3" machine guns. 4 18" TT in pairs.

A fifth vessel of this type, name unknown, has been reported in commission.

5 Coastal Type

NOS. 5, 6, 7, 8, 9 (1906-1908). Standard Displacement: 50 tons. Dimensions: 106' x 12' 9" x 6' 6". Propulsion: Coal-burning reciprocating engine, 800 SHP. Speed: 21 kts. Armament: 1 1-pounder. 2 18" TT.

These craft are used for local patrol duties only.

COAST DEFENSE SHIPS

3 Sverige Class

| Name | Builder | Keel Laid | Launched | Comp. |
|--------------------|------------|-----------|----------|-------|
| SVERIGE | Götaverken | 1913 | 5/ 3/15 | 1916 |
| DROTTNING VICTORIA | Götaverken | 1915 | 9/15/17 | 1918 |
| GUSTAV V | Kockums | 1916 | 1/18/18 | 1918 |

Standard Displacement: 7,300 tons (*Gustav V*), 7,100 (others). Dimensions: 392' 10" (*Sverige*), 396' 7" (others) w.l. x 61' x 22' max.

Propulsion: Four screws, four sets geared turbines, 20,000 SHP (*Sverige*), two screws two sets geared turbines, 22,000 SHP (others). Speed: 22.5 kts.

Armament: 4 11"/45 in twin turrets; 8 6"/50 (*Drottning Victoria*), 6 6" (others) in varying arrangements of single mounts; numerous smaller AA including Bofors 40 mm as well as 25 mm of a design and caliber distinctive in the Swedish Navy. Armor: 8" belt; 8" turret faces; 1.6" decks. Planes: 0. Catapults: 0.

Vessels of this type, small ships with a few big guns, are no longer built; the only recent examples, a projected, unnamed, Swedish pair, were abandoned in 1940. Their utility is questionable as they are too slow to run away from the many vessels they do not outgun. The *Drottning Victoria* and *Gustav V* burn both oil and coal.

Sweden also has four older coast defense ships, now out of commission and used as training vessels and for other auxiliary duties: the *Oscar II*, the *Äran*, the *Tapperheten* and the *Manligheten*. A fifth vessel, even older, the *Wasa*, was recently broken up.

SUBMARINES

7 or more U-1 Class

U-1 (1941); U-2, U-3 (both 1942); U-4, U-5, U-6, U-7 (all 1943) and others building. Displacement: Surface, 397 tons; submerged, unreported. Length, 164'; other dimensions unreported. Armament: 4 21" TT; guns unreported. No other details of the U-1 class, built for coast defense, are available.

3 Najaden Class

NAÄCKEN, NAJADEN, NEPTUN (all 1942). Displacement: Surface, 545 tons. No other details reported.

8 Sjölejonet Class

SJÖLEJONET (1938), SJÖBJÖRNEN (1938), SJÖHUNDEN (1938), DYKAREN (1940), SVÄRDFISKEN (1940), TUMLAREN (1940), SJÖHÄSTEN (1941), SIOORMEN (1941). Displacement: Surface, 580 tons; submerged, 760. Dimensions: 204' x 20' 6" x 11'. Propulsion: Diesels (3,000 HP) and electric motors (HP unreported). Speed: Surface, 15 kts.; submerged, 10. Armament: 6 21" TT (three bow, one stern and two on after deck), 2 40 mm AA, 2 MG AA; fitted for minelaying.

The Sjölejonets possess the unusual feature in a submarine of torpedo tubes mounted on deck, an arrangement resorted to by the Swedes in order to provide minelaying facilities without having to sacrifice torpedo armament to an undue degree, as is usually the case in submarines the size of the Sjölejonets. A ninth vessel of the class, *Sjöborren*, collided with a steamer in the Baltic in 1942 and was sunk.

3 Delfinen Class

DELFINEN (1934), NORDKAPAREN (1935), SPRINGAREN (1935). Displacement: Surface, 540 tons; submerged, 720. Dimensions: 199' x 20' 6" x 11'. Propulsion: Diesels and electric motors (HP unreported). Speed: Surface, 15 kts.; submerged, 10. Armament: 4 21" TT (three bow, one stern), 1 4.1", 1 57 mm AA; fitted for minelaying.

2 Draken Class

DRAKEN (1926), GRIPEN (1928). Displacement: Surface, 667 tons; submerged, 850. Dimensions: 213' 3" x 21' x 11' 9". Propulsion: Diesels (2,800 HP) and electric motors (HP unreported). Speed: Surface, 15 kts.; submerged, 9. Armament: 4 21" TT, 1 3" AA, 1 25 mm AA.

A third ship of this class, the *Ulven*, was sunk in Swedish territorial waters by a German mine in the spring of 1943. Sweden lodged a strong protest in Berlin, but did nothing else. The *Draken* was attacked by an armed German merchantman a few days later—also well within Swedish waters—but escaped serious injury.

1 Valen Class

VALEN (1925). Displacement: Surface, 501 tons; submerged, 730. Dimensions: 188' x 23' 3" x 10'. Propulsion: Diesels (2,800 HP) and electric motors (HP unreported). Speed: Surface, 15 kts.; submerged, 9. Armament: 4 21" TT, 1 3", 1 25 mm AA; fitted for minelaying.

2 Bävern Class

8ÄVERN (1920), UTTERN (1922). Displacement: Surface, 429 tons; submerged, 640. Dimensions: 185' x 18' 6" x 10'. Propulsion: Diesels (2,800 HP) and electric motors (HP unreported). Speed: Surface, 15 kts.; submerged, 9. Armament: 4 21" TT (all bow), 1 6-pounder AA, 1 MG.

Illern, third ship of the 8ävern class, was accidentally lost in August, 1943.

2 Hajen Class

HAJEN (1917), VALROSSEN (1918). Displacement: Surface, 392 tons; submerged, 600. Dimensions: 171' x 16' 6" x 11' 6". Propulsion: Diesels (2,800 HP) and electric motors (HP unreported). Speed: Surface, 15 kts.; submerged, 9. Armament: 4 18" TT, 1 6-pounder AA.

Sälen of this type scrapped in 1942.

AUXILIARIES AND SPECIAL TYPES

MOTOR TORPEDO BOATS

A 200-ton seagoing type of Swedish design was reported under construction late in 1943.

T-21-27 (1941-2). Built by Kockums to British designs. Displacement: 28 tons. Length: 68' 9". Two screws, two sets gasoline motors, 3,450 HP. 1 20 mm AA, 2 21" TT.

T-15-18 (1941). Built by Kockums. Similar to Italian M.A.S. type in design. Displacement: 22 tons. Length: 62' 6". 1,150 HP. 1 22 mm AA, 2 18" TT.

T-3, 4 (1939). Built by Vosper, England. Of standard Vosper type, resembling many British MTBs closely in appearance. Displacement: 25 tons. Length: 60'. Two screws, two sets gasoline motors, 2,300 HP. 41 kts. 2 MG, 2 18" TT.

T-11-14 (1939). Built in Italy, resembling standard Italian M.A.S. type. Displacement: 17 tons. Length: 55' 9". Two screws, two sets gasoline motors, 2,000 HP. 47 kts. 1 MG, 2 18" TT. Among the vessels purchased by Sweden during the Russo-Finnish war crisis of 1939-40.

PATROL VESSELS

Jägaren Class: JÄGAREN (1932), KAPAREN (1933), SNAPPHANEN (1933), VÄKTAREN (1934). All built at Karlskrona. Displacement: 287 tons. 177' x 19' 6" x 8' 3". Geared turbines, 3,600 SHP. 23 kts. Armament: 2 3", 2 25 mm AA, 2 DCT.

10 Altor Class: ALTAIR, ANTARES, ASTREA, IRIS, PERSEUS, POLARIS, REGULUS, RIGEL, SPICA, THETIS (all 1908-10). Ex-torpedo boats. Displacement: 105 tons. 128' x 14' 6" x 9'. 2,000 HP. 25 kts. Armament: 1 40 mm, 2 MG, 1 18" TT.

V-5-12, 14, 15 (1906-08). Ex-torpedo boats. Displacement: 50 tons. 106' x 12' 9" x 6' 6". 800 HP. 21 kts. Coal-burners. Armament: 1 37 mm AA, 2 18" TT. Manned by Coast Artillery.

V-27 Class: V-27 (ex-*Blitz*), V-28 (ex-*Meteor*), V-30 (ex-*Orkan*), V-33 (ex-*Virgo*), V-34 (ex-*Mira*), V-35 (ex-*Orion*) (all 1898-1903). Ex-torpedo boats. Displacement: 90 tons. 128' x 15' 9" x 8' 3". 1,300 HP. 23 kts. Armament: 2 37 mm, 1 15" TT. May have been scrapped.

MINELAYERS

ELVSNA88EN (Eriksberg, 1943). Displacement: 3,350 tons. No other particulars available.

CLAS FLEMING (1912; completely rebuilt, 1941). Standard Displacement: 1,735 tons. 282' x 34' x 14'. Diesels. 20 kts. Armament: 4 4.7"/50, 4 MG. Mine capacity unreported.

MINING TENDERS

No. 1 (1937), 200 tons. 10 kts.

No. 9 (1912), 120 tons. 9 kts.

Nos. 7-8 (1804-5), 109 tons. 7.5 kts.

Nos. 5-6 (1885-93), 108 tons. 6.5 kts.

No. 3 (1879), 99 tons. 6.5 kts.

Swedish mining tenders are manned by the Coast Artillery.

MINESWEEPERS

12 Bredskär Class: 8REDSKÄR, 8REMÖN, GRÖNSKÄR, HOLMÖN, KOSTER, KULLEN, ORSKÄR, RAMSKÄR, SANDÖN, ULVÖN, VEN, VINGA (all 1940-41) and possibly others. Displacement: 395 tons. 17 kts. Armament: 2 4.1", 2 25 mm AA, 2 MG, 2 DCT. Are slightly enlarged editions of *Arholma* and *Landsort*.

M-15-26 (1941). Displacement: 65 tons. 85' 6" x 16' 6" (draft unreported). 13 kts. 1 20 mm AA. Slightly enlarged editions of M-3 type.

M-3-14 (1940). Displacement: 50 tons. 78' 9" x 16' 6" (draft unreported). 13 kts. 1 20 mm AA.

ARHOLMA, LANDSORT (both 1937). Both built at Karlskrona. Standard Displacement: 365 tons. 186' x 24' 9" x 7' max. Geared turbines, 3,200 SHP. 19 kts. Armament: 2 4.1", 2 25 mm AA, 2 MG, 2 DCT.

M-1, 2 (both 1936). Standard Displacement: 61 tons. 100' 9" x 14' x 3' 6". Diesels, 600 HP. 16 kts. 2 8 mm AA.

STARKODDER (ex-Graham, 1925). Norwegian-built whaler, purchased 1935 for conversion to minesweeper. Displacement: 375 tons. 90' 9" x 23' x 14'. Reciprocating engines, 750 HP. 11 kts. 1 37 mm AA.

STYRBJÖRN (ex-Klo, 1923). Norwegian-built whaler, purchased 1935 for use as minesweeper. Displacement: 350 tons. 104' x 22' x 14'. Reciprocating engines, 570 HP. 10.5 kts. 1 37 mm AA.

MISCELLANEOUS

ATLE (1926). Icebreaker. Displacement: 1,750 tons. 207' x 55' 9" x 20' 6". 4,000 HP. 16 kts. Armament: 4 57 mm AA, 4 MG.

BELOS (1885). Acquired 1941 for use as salvage vessel. Displacement: 895 tons. 167' 9" x 26' x 13' 6". Reciprocating engines, 550 HP. 11 kts.

BRÄNNAREN (Kockums, 1935). Oiler. Displacement: 1,082 tons. 173' x 29' x 12'. Diesels, 500 HP. 10 kts.

ELDAREN (ex-Muron, 1938). Oiler. Displacement: 585 tons. 174' x 26' x 10'. 9.5 kts. 2 25 mm AA.

JACOB BAGGE (1898). Ex-torpedo boat destroyer. Displacement: 750 tons. Coal-burning reciprocating engines, original power, 4,000 HP, for designed speed of 20 kts. 2 4.7", 4 25 mm AA. Sister of *Ornen*. Employed as training and storeship.

JARRAMAS (1900), NAJADEN (1897). Sail training vessels. Displacement: 350 tons. 108' 3" x 27' 6" x 12'.

OLJAREN (ex-Martha, 1939). Oiler. Displacement: 717 tons. 190' x 27' 6" x 11'. 9 kts. 2 25 mm AA.

ÖRNEN (1896). Ex-torpedo boat destroyer, sister of *Jacob Bagge*. Employed as training and storeship.

PATRICIA (ex-Patris II, 1926). Storeship. British-built ex-merchantman, acquired in 1940. Displacement: 3,445 tons. 345' x 47' 6" x 20'. Reciprocating engines, 2,450 HP. 15 kts. Armament: 8 40 mm AA, 2 20 mm AA.

PRINS CARL (ex-Munin, 1931). Hospital ship. Displacement: 1,400 tons. 262' 6" x 37' x 16' 6". 12 kts.

SÖKAREN, SPRÄNGAREN, SVEPAREN (1917-18). Picket boats. Displacement: 160 tons. 85' 4" x 23' x 10'. 400 HP. 10 kts. 1 25 mm, 1 MG.

SVENSKSUND (1931). Fishery protection vessel. Displacement: 360 tons. 124' 8" x 26' x 12'. Coal-burner, 400 HP. 12 kts. Armament: 2 57 mm, 1 20 mm AA.

V-71-73 (1932). Picket boats. Displacement: 25 tons. 62' 4" x 12' 6" x 5'. 11.5 kts. Armament: 1 37 mm. Manned by the Coast Artillery.

V-74-76 (1933). Picket boats. Displacement: 28 tons. 69' x 12' 6" x 5'. 11.5 kts. Armament: 1 37 mm. Manned by the Coast Artillery.

YMER (Kockums, 1933). Icebreaker. Standard Displacement: 3,465 tons. 257' x 63' 4" x 21'. Diesel-electric drive, 9,000 HP. 16.5 kts. *Ymer* was the first large Diesel-electric icebreaker.

AIRCRAFT AUXILIARIES

DRISTIGHETEN (Gothenburg, 1900). Ex-coast defense ship, converted into an aircraft tender in 1930. Displacement: 3,270 tons. 285' x 48' 6" x 17'. Coal-burner, 5,000 HP. 16 kts. Normally carries only three planes. Armament: 4 3" AA, 2 40 mm AA, 4 MG AA; fitted for laying mines.

V-19 (1914). Ex-picket boat employed as aircraft tender. Displacement: 55 tons. 75' 6" x 16' x 7'. Semi-Diesel, 12 kts. Armament: 1 1-pounder, 1 MG.

TURKEY

BATTLE CRUISERS

Turkey is reported to have received certain naval armament, possibly including a number of combat vessels, from the U. S. and Great Britain during 1942-3 under lend-lease, in addition to the four *Demirhisar* class destroyers, four *Burak Reis* submarines and two minelayers built in England to Turkish order. Details, however, are lacking.

1 Yavuz Class

| Name | Builder | Keel Laid | Launched | Comp. |
|-------------------|--------------|-----------|----------|-------|
| YAVUZ (ex-Goeben) | Blohm & Voss | B/09 | 1911 | 7/12 |

Standard Displacement: 23,100 tons. Dimensions: 610' 3" w.l. x 96' 10" x 26' 11" max.

Propulsion: Four screws, four sets direct drive turbines, 52,000 SHP. Speed: 25.5 kts.

Armament: 10 11"/50 in twin turrets; 10 5.9"/45 in sideports; 8 3.5" AA; 12 Bofors 40 mm AC AA; 4 MG; 2 19.7" TT. Armor: 5"-10.5" belt; 8" turrets; 1"-3" deck. Planes: 0. Catapults: 0.

The *Yavuz* is one of the two most powerful warships in the Black Sea, the other being the Soviet battleship *Pariskaya Kommuna*. The *Yavuz* was built as the *Goeben*, one of the German Navy's extraordinarily powerful (for that time) pre-Jutland battle cruisers. Visiting Constantinople at the outbreak of the last war, she was unable to return and was transferred to the Turkish navy when Turkey came in on the side of the Central Powers. She was mined twice, striking five mines in all, and was laid up until 1926, when a French shipbuilding firm, Penhoet, undertook the difficult task of repairing her without the use of a dock able to bear her weight. She was again refitted in 1938, and is about as powerful an old vessel as exists. On trials in 1930, she exceeded her original designed speed by more than a knot and a half, a quite unusual performance for a pre-war vessel. If Turkey enters the war on the Allied side, the *Yavuz* and other Turkish fleet units, though they do not begin to compare in power even with many small Allied naval units, can be expected to play a useful and strategic role. They are among the arms with which Turkey has kept control of the Strait of Dardanelles and the Bosphorus.

DESTROYERS

4 Demirhisar Class

DEMIRHISAR, GAYRET, MUAVENET, SULTANHISAR (all 1941-2). Built in England and delivered 1942. Standard Displacement: 1,360 tons. Dimensions: 323' x 33' x 8' 6". Propulsion: Two screws, two sets geared turbines, 34,000 SHP. Speed: 35.5 kts. Armament: 4 4.7" behind small shields; 6 smaller; 8 21" TT in quadruple mounts.

The *Demirhisars*, which resemble the British *Icarus* class, were ordered by Turkey in 1939, shortly after the conclusion of the treaty of mutual assistance between Britain and Turkey, which Turkey studiously avoided fulfilling during the period when it seemed as though the Nazis were winning. Britain, for her part, did not complete them until the danger that they would fall into German hands was past. They are the most modern units of the Turkish fleet, barring any Turkey may have obtained later under lend-lease.

2 Adatepe Class

ADATEPE, KOCATEPE (both 1931). Built by Ansaldo, Italy. Standard Displacement: 1,250 tons. Dimensions: 328' 8" x 30' 9" x 9' 6". Propulsion: Two screws, two sets geared turbines, 40,000 SHP. Speed: 36 kts. Armament: 4 4.7"/50; 2 40 mm AA; 2 20 mm AA; 6 21" TT in triple mounts.

The *Adatepe* and *Kocatepe*, like most Turkish combatant units, foreign-built, resemble the Italian *Folgore* class.

2 Tinaztepe Class

TINAZTEPE, ZAFER (both 1931). Built by Tirreno, Italy. Standard Displacement: 1,206 tons. Dimensions: 315' x 30' 6" x 10' 9". Propulsion: Geared turbines, 35,000 SHP. Speed: 36 kts. Armament: 4 4.7"/50 twinned behind small shields; 2 40 mm AA; 2 20 mm AA; 6 21" TT in triple mounts.

The *Tinaztepe* and *Zafer* resemble the Italian *Turbine* class.

SUBMARINES

The submarine *Batiray*, an enlarged version of the *Saldiray* built in Germany to Turkish order, was taken over by the German navy after the outbreak of war. It will be found under German submarines.

4 Burak Reis Class

BURAK REIS, MURAT REIS, ORUC REIS, ULUC ALI REIS (all 1940). Built in England and delivered 1942. Displacement: Surface, 683 tons; submerged, 856. Dimensions: 201' 6" x 22' 4" x 10' 6". Propulsion: Diesels (1,550 HP) and electric motors (1,300 HP). Speed: Surface, 13.75 kts.; submerged, 9. Armament: 5 21" TT (four bow, one stern); 1 3"; 1 MG.

2 Saldiray Class

SALDIRAY (Kiel, 1938), YILDIRAY (Istanbul, 1939). Displacement: Surface, 934 tons; submerged, 1,210. Dimensions: 262' 6" x 21' x 14'. Propulsion: Diesels (3,500 HP) and electric motors (HP unreported). Speed: Surface, 20 kts.; submerged, 9. Armament: 6 21" (four bow, two stern); 1 4"; 1 20 mm AA.

Saldiray was built in Germany and *Yildiray* in Istanbul to German designs. A third vessel of this type, *Atilay*, was lost during a training cruise off Cannakale, Turkey, on July 14, 1942.

1 Gür Class

GÜR (Cadiz, Spain, 1932). Displacement: Surface, 750 tons; submerged, 960. Dimensions: 237' 6" x 20' 4" x 13' 6". Propulsion: Diesels (2,800 HP) and electric motors (1,000 HP). Speed: Surface, 20 kts.; submerged, 9. Armament: 6 21" TT (four bow, two stern); 1 4"; 1 20 mm AA.

The *Gür* was built to German designs and, in part, of parts manufactured in the Netherlands. Turkey bought her from the Spanish navy, for whom she was originally constructed, in 1934.

1 Dumlupinar Class

DUMLUPINAR (1931). Built by Cante Navale Triestino, Monfalcone, Italy. Displacement: Surface, 920 tons; submerged, 1,150. Dimensions: 223' x 19' x 14'. Propulsion: Diesels (3,000 HP) and electric motors (1,400 HP). Speed: Surface, 17.5 kts.; submerged, 9. Armament: 6 21" TT (four bow, two stern); 1 4"; 1 MG; fitted as minelayer, capacity, 40 mines.

1 Sakarya Class

SAKARYA (1931). Built by Cante Navale Triestino, Monfalcone, Italy. Displacement: Surface, 610 tons; submerged, 940. Dimensions: 196' p.p. x 22' 4" x 13'. Propulsion: Diesels (1,600 HP) and electric motors (1,100 HP). Speed: Surface, 16 kts.; submerged, 9.5. Armament: 6 21" TT; 1 4"; 1 20 mm AA.

2 Birinci İnönü Class

BIRINCI İNÖNÜ, İKİNCİ İNÖNÜ (both 1927). Built by Fijenoord Co., Rotterdam. Displacement: Surface, 505 tons; submerged, 620. Dimensions: 192' 6" x 19' x 11' 6". Propulsion: Diesels (1,100 HP) and electric motors (HP unreported). Speed: Surface, 13.5 kts.; submerged, 8.5. Armament: 4 17.7" TT (four bow, two stern); 1 3"; 1 20 mm AA.

OTHER VESSELS

2 Old Cruisers

HAMIDIYE (ex-*Abdul Hamid*, built in England, 1903). 3,830 tons. 368' x 47' 6" x 16'. Best present speed, 18 kts. 2 5.9", 8 3" guns. 4" deck armor. Fitted as minelayer.

MECIDIYE (ex-*Prut*, ex-*Medjidieh*, built in U. S., 1903). 3,500 tons. 330' x 42' x 17' 6" max. 18 kts. 6 5.1", 4 3", 2 MG. Deck armor, 1".

The *Hamidiye* and *Mecidiye* are now used as cadet training vessels. *Mecidiye*, as *Medjidieh*, was one of main units of old Ottoman Turkish fleet. She was mined and sunk in the Black Sea in April, 1915, but salvaged and repaired by the Russians, in whose fleet she served briefly as the *Prut*. In 1918, Austro-German forces seized her at Sevastopol and returned her to Turkey. She was refitted extensively in 1930.

3 Motor Torpedo Boats

DOGAN, DENİZKUSU, MARTI (1926). Purchased from Italy in 1931. 32 tons. 69' x 13' 9" x 4'. 34 kts. 2 18" TT, 1 3", 1 MG, 8 depth charges.

5 Minelayers

SIVRIHISAR, YUZBASİ HAKKI (both 1940). Built in England. 350 tons. 172' x 26' x 5' 9". Diesel engines, 15 kts. 1 3" gun; 40 mines.

ATAK (1938). Built in Turkey. 500 tons. 144' 4" x 26' 3" x 11' 9". 13 kts. 80 mines.

NUSRET (ex-*Yardim*, ex-*Nusret*, 1912). Built at Kiel. 365 tons. 132' x 22' x 8' 3". 15 kts. 2 57 mm guns; 25 mines.

UYANIK (ex-*Intibah*, ex-*Warren Hastings*, 1886). Built at Glasgow. 616 tons gross. 202' x 30' x 12'. 12 kts. 50 mines.

The *Nusret* has probably accomplished more destruction than any other single small vessel in existence. It was she that laid the minefield in the Dardanelles which sank three Allied battleships in one day during the last war, March 18, 1915. (The battleships were the British *Irresistible* and *Ocean*, and the French *Bouvet*). *Uyanik* was originally a salvage tug.

5 Minesweepers

ISA REIS (1911); HIZIR REIS, KEMAL REIS (ex-*Durak Reis*) (both 1912). Built in France. 413 tons. 154' 3" x 25' 9" x 4' 3". 14 kts. 3 3"; 2 3-pounder; 2 MG.

CANAK (ex-*MMS-2*), KAVAK (ex-*MMS-1*) (both 1937). Built in England, bought by Turkey, 1939. Motor type. Wood. 32 tons. 75' x 14' 4" x 5' max. 15 kts. Armament unreported.

2 Yachts

GUNES DIL (ex-*Savarona*, 1931). Built by Blohm & Voss, Germany. 5,710 tons. 408' 6" x 53' x 20' 6". Two screws, two sets geared turbines, 10,750 SHP. 21 kts. 2 3-pounders.

ERTUGRUL (1903). Built in England. 964 tons. 260' p.p. x 27' 10" x 11' 6". 21 kts. 8 3-pounders.

The *Gunes Dil* and *Ertugrul* are not part of the Turkish navy in peacetime, but come under its control in time of war. The *Gunes Dil* is reputed the most sumptuously fitted yacht afloat. It is, of course, for the use of Turkish government leaders.

2 Gunboats

PEYK (ex-*Peykisevket*, 1906), 8ERK (ex-*Berkisevket*, 1907). Built at Kiel. 775 tons. 262' 6" x 27' 8" x 9' 6". About 20 kts. 2 3.9", 4 6-pounders.

Peyk was torpedoed by a British submarine in 1915, but was beached and repaired. *Berk* struck a mine, also during the Great War, but was not badly damaged. Both ships were refitted shortly before the present war.

Miscellaneous

AKIN (ex-*Rasit*, ex-*Cow Whale* 1915). Diving tender. Former British Admiralty whaler, purchased 1926. 338 tons.

AYDIN REIS (1912). Surveying vessel. Built in France. 502 tons. Unarmed in peacetime.

DALGIC. Submarine tender. Laid down in Turkey in 1939. No further details reported.

ERKIN (ex-*Trier*, 1923). Submarine tender. Former Nord Deutscher Lloyd freighter, purchased 1936. 16,800 tons.

GÖLCÜK (1935). Oiler. Built in Turkey. 1,255 tons. Capacity: 750 tons of oil.

ULKU (ex-*Shandon*, 1919). Collier. Built in England, purchased 1934. 7,233 tons. Capacity: 5,150 tons of coal.

UNITED STATES-WAR LOSS

(This list includes vessels lost on the so-called U. S. neutrality patrol, as well as through accidents during the war period. War multiplies the hazards of navigation, i.e., navigation aids are shut down, ships travel without lights, visit areas or go out in weather they would not ordinarily risk. Accidents occurring under such circumstances are properly considered war losses. Figures in parentheses refer to year vessel was launched. Unless otherwise specified, tonnage is standard displacement.)

BATTLESHIPS

ARIZONA, BB-39 (1915), 32,500 tons. The *Arizona* was the worst hit of five U. S. battleships crippled at Pearl Harbor, Dec. 7, 1941, and only one listed as total loss.

CRUISERS

ASTORIA, CA-34 (1933), 9,950 tons. Fired by Japanese guns in early hours of Aug. 7, 1942, in Battle of Savo Island. Burned through the night and sank at dawn.

ATLANTA, CL-51 (1941), 6,000 tons. Sunk by Japanese surface forces, Battle of Guadalcanal, Nov. 13, 1942.

CHICAGO, CA-29 (1930), 9,300 tons. A Houston class vessel, crippled by Japanese air torpedoes in South Pacific, Jan. 29, 1943; sunk in a second attack next morning.

HELENA, CL-50 (193B), 10,000 tons. Sent to the bottom by enemy torpedoes, Battle of Kula Gulf, July 6, 1943, after she had sunk at least four of the enemy. *Helena* was only U. S. loss in that major action.

HOUSTON, CA-30 (1929), 9,060 tons. The *Houston* and *H.M.A.S. Perth* reported contacting a large Japanese force during the night of Feb. 27-8, 1942, as the two Allied ships attempted run through Sunda Strait to escape doomed Java. Neither was heard from again.

JUNEAU, CL-52 (1941), 6,000 tons. Sunk by Japanese surface forces, Battle of Guadalcanal, Nov. 13, 1942.

NORTHAMPTON, CA-26 (1929), 9,050 tons. Another Houston class, sunk by Japanese surface forces north of Guadalcanal, Dec. 1, 1942.

QUINCY, CA-39 (193B), 9,375 tons. A sister of the *Astoria*, sunk by Japanese gunfire in the Battle of Savo Island, Aug. 9, 1942.

VINCENNES, CA-44 (1936), 9,400 tons. Another Astoria class unit, sent to the bottom by Japanese gunfire in the Battle of Savo Island, Aug. 9, 1942.

DESTROYERS

AARON WARD, DD-4B3 (1941), 1,700 tons. An Ellyson class unit, damaged by bombs and sunk while under tow, near Solomon Is., April 7, 1942.

BARTON, DD-599 (1942), 1,700 tons. Another Ellyson, sunk by enemy surface forces in first Battle of Guadalcanal, Nov. 13, 1942.

BEATTY, DD-640 (1940), 1,700 tons. Still another Ellyson, sent to the bottom by German torpedo planes in the Mediterranean, Nov. 6, 1943.

BENHAM, DD-397 (1938), 1,500 tons. McCall type, sunk by enemy surface forces in the first Battle of Guadalcanal, Nov. 13, 1942.

BLUE, DD-3B7 (1937), 1,500 tons. Craven class, sunk by unspecified enemy action off Guadalcanal, late August, 1942.

BORIE, DD-215 (1919), 1,190 tons. Four-stacker, damaged in ramming U-boat, later sank; loss announced Nov. 10, 1943.

BRISTOL, DD-453 (1941), 1,700 tons. Nameship of one of two standard types of current U. S. destroyer (now known as Ellyson class), sunk by mine or torpedo off Italy, Oct. 13, 1943.

BROWNSON, DD-51B (1942), 2,100 tons. Fletcher class, sunk by enemy aircraft during U. S. landings at Cape Gloucester, New Britain; identified Jan. 13, 1944 as ship announced lost Dec. 27, 1943.

BUCK, DD-420 (1939), 1,570 tons. Sims class vessel, sunk by underwater explosion off Italy, Oct. 9, 1943.

CASSIN, DD-372 (1935), 1,500 tons. Mahan class, destroyed in drydock at Pearl Harbor by Japanese bombs, Dec. 7, 1941.

CHEVALIER, DD-452 (1942), 2,100 tons. Damaged in battle off Vella Lavella Island, Oct. 6, 1943. Later collided with another destroyer, broke in two and sank.

CUSHING, DD-376 (1935), 1,500 tons. A sister of the *Cassin* and *Downes*, sunk by enemy surface forces in the first Battle of Guadalcanal, Nov. 13, 1942.

DE HAVEN, DD-469 (1942), 2,100 tons. First of the powerful Fletcher type to be lost, sunk by enemy air action, south of Savo Island, Feb. 1, 1943.

DOWNES, DD-375 (1936), 1,500 tons. Another Mahan-class Pearl Harbor victim, destroyed in drydock by Japanese bombs, Dec. 7, 1941.

DUNCAN, DD-4B5 (1941), 1,700 tons. An Ellyson, sunk by Japanese surface forces in the Battle of Cape Esperance, Oct. 12, 1942.

EDSALL, DD-219 (1920), 1,190 tons. A World War I flush-decker, missing south of Java, late February, 1942.

GWIN, DD-433 (1940), 1,630 tons. A Benson class ship, damaged in the second battle of Kula Gulf, July 13, 1943, sank later the same day.

HAMMANN, DD-412 (1939), 1,570 tons. Hughes type, torpedoed east of Midway, June 6, 1942, while assisting injured *Yorktown*.

HENLEY, DD-391 (1937), 1,500 tons. Lost in Pacific as result of underwater explosion, October, 1943.

INGRAHAM, DD-444 (1941), 1,630 tons. Another Benson, lost by collision in the Atlantic, August, 1942.

JACOB JONES, DD-130 (191B), 1,090 tons. One of early World War I flush-deckers, named for a DD lost in the early days of the last war; torpedoed by a U-boat (fate of her predecessor) off Cape May, N. J., Feb. 28, 1942.

JARVIS, DD-393 (1937), 1,500 tons. Of the Craven class, disappeared in the South Pacific on way to base to undergo repair of battle damage, early August, 1942.

LAFFEY, DD-459 (1941), 1,700 tons. Another Ellyson, sunk by enemy surface forces, the first Battle of Guadalcanal, Nov. 13, 1942.

LEARY, DD-15B (191B), 1,090 tons. Four-stacker, torpedoed and sunk in the Atlantic on Christmas Eve, 1943.

MADDOX, DD-622 (1942), 1,700 tons. Still another Ellyson, lost in the Mediterranean, July, 1943.

MEREDITH, DD-434 (1940), 1,630 tons. Benson type, aerial torpedoed near the Solomons, Oct. 19, 1942.

MONSSEN, DD-436 (1940), 1,630 tons. A sister of the *Meredith*, sunk by enemy surface forces in the first Battle of Guadalcanal, Nov. 13, 1942.

O'BRIEN, DD-415 (1939), 1,570 tons. A Hughes class vessel, lost in the Pacific, late October, 1942.

PEARY, DD-226 (1920), 1,190 tons. A four-stacker, sunk in Darwin harbor by Japanese air attack, Feb. 19, 1942.

PERKINS, DD-377 (1935), 1,465 tons. Mahan class, sunk by collision on New Guinea coast, Nov. 29, 1943.

PILLSBURY, DD-227 (1920), 1,190 tons. Missing south of Java, late February, 1942.

POPE, DD-225 (1920), 1,190 tons. Still another four-stacker, sunk by Japanese bombers en route from Java, March 1, 1940.

PORTER, DD-356 (1935), 1,850 tons. Aerial torpedoed Oct. 26, 1942, in the Battle of Santa Cruz.

PRESTON, DD-379 (1936), 1,500 tons. Mahan class, sunk by enemy surface forces in the second Battle of Guadalcanal, Nov. 15, 1942.

REUBEN JAMES, DD-245 (1919), 1,190 tons. Four-stacker, first U. S. vessel lost in World War II, torpedoed in the North Atlantic by U-boat, Oct. 31, 1941.

ROWAN, DD-405 (1938), 1,500 tons. McCall class, lost off Italy, Sept. 11, 1943.

SIMS, DD-409 (1939), 1,570 tons. One of newest U. S. destroyer types, sunk by Japanese bombs in Coral Sea, May 7, 1942.

STEWART, DD-224 (1920), 1,190 tons. War I flush-decker, destroyed at Perak, Java, March 2, 1942, to prevent her falling into enemy hands.

STRONG, DD-467 (1942), 2,100 tons. Lost during naval bombardment of Vila, July 8, 1943.

STURTEVANT, DD-240 (1920), 1,190 tons. Sunk by mine or torpedo off Florida, April, 1942.

TRUXTUN, DD-229 (1920), 1,190 tons. Flush-decker, grounded and broke up in Newfoundland storm, Feb. 18, 1942.

TURNER, DD-648 (1943), 1,700 tons. Ellyson class. Exploded accidentally and sank at entrance to New York harbor, Jan. 3, 1944; may be salvable.

WALKE, DD-417 (1939), 1,570 tons. A sister of the *Sims*, sunk by enemy surface forces in first Battle of Guadalcanal, Nov. 13, 1942.

ANTI-SUBMARINE CRAFT

ASHEVILLE, PG-21 (191B), 1,270 tons. Gunboat, disappeared off Java, March, 1942.

CYTHERA (ex-yacht). Reported missing in Atlantic, June 4, 1942.

LUZON, PR-4 (1927), 560 tons. River gunboat, damaged by enemy gunfire and destroyed to prevent capture, Corregidor, early May, 1942. (Japanese reported to have raised and repaired her, renaming her *Karatu*.)

MINDANAO, PR-8 (1927), 560 tons. River gunboat, sister of *Luzon*, sunk by Japanese bombs off Corregidor, early May, 1942.

MOONSTONE, PYC-9 (ex-*Lono Star*, 1929), 469 tons. Coastal yacht, lost in collision, Atlantic, Oct. 15-16, 1943.

NIAGARA, PG-52 (ex-yacht *Hi-Esmaro*, 1929), 1,333 tons. Rated as gunboat but used as PT mothership, lost in Solomons, May 23, 1943.

OAHU, PR-6 (1927), 450 tons. River gunboat, sunk by Japanese gunfire from Bataan, off Corregidor, early May, 1942.

PLYMOUTH, PG-57 (ex-yacht *Alva*, 1930), 2,265 tons. Gunboat, lost in Atlantic, summer of 1943.

PC-457 (ex-yacht *Trouper*). Missing in Atlantic, August, 1941.

PC-496 (1941), 165-foot sub-chaser. Lost, summer, 1943.

SC-694 (1942), 110-foot sub-chaser. Lost in Mediterranean, September, 1943.

SC-696 (1942), 110-foot sub-chaser. Lost in Mediterranean, September, 1943.

WAKE, PR-3 (1927), 370 tons. The ex-*Guam*, river gunboat seized by Japanese at Shanghai, Dec. 8, 1941.

YP-389 (ex-fishing vessel). Sunk by U-boat gunfire in Atlantic, June, 1942.

SUBMARINES

AMBERJACK, SS-219 (1942), 1,525 tons. Reported missing in Pacific, June 12, 1943.

ARGONAUT, SS-166 (1927), 2,710 tons. Only U. S. submarine minelayer and one of largest American undersea craft, reported missing in South Pacific, Feb. 20, 1943.

CISCO (1942), 1,525 tons. Reported missing in Pacific, Feb. 9, 1944.

DORADO, SS-248 (1943), 1,525 tons. First "repeat Albacore" to be lost, reported missing in Pacific, Oct. 24, 1943.

GRAMPUS, SS-207 (1940), 1,475 tons. Reported missing in South Pacific, June 12, 1943.

GRAYLING, SS-209 (1940), 1,475 tons. Announced lost, presumably in Pacific, Dec. 24, 1943.

GRENADIER, SS-210 (1940), 1,475 tons. Another G-class of 1939 sub, missing in Pacific, September, 1943.

GRUNION, SS-216 (1941), 1,525 tons. G-class of 1940 unit, reported missing in Pacific, Oct. 5, 1942.

PERCH, SS-176 (1936), 1,330 tons. Reported missing in Pacific, April 11, 1942.

PICKEREL, SS-177 (1936), 1,330 tons. Sister of the *Perch*, lost in Pacific, summer, 1943.

POMPANO, SS-181 (1937), 1,330 tons. P-of-1934, reported missing in Pacific, Jan. 5, 1944.

RUNNER, SS-275 (1942), 1,525 tons. A "repeat Albacore," reported missing, Oct. 27, 1943.

R-12, SS-89 (1918), 530 tons. Lost in training accident, June, 1943.

SEALION, SS-195 (1939), 1,475 tons. Unit of new S class, destroyed at Cavite, December, 1942, when bomb damage made it impossible to move her from doomed Navy base.

SHARK, SS-174 (1935), 1,315 tons. Reported missing in Pacific, March 18, 1942.

S-26, SS-131 (1922), 800 tons. An old S class vessel, sunk in collision off Panama, Jan. 24, 1942.

S-44, SS-155 (1923), 850 tons. Reported missing, Feb. 9, 1944.

TRITON, SS-201 (1940), 1,475 tons. Reported missing in Pacific, July 22, 1943.

WAHOO, SS-238 (1942), 1,525 tons. Submarine that sank an entire Japanese convoy in 1942, reported missing in Pacific, Dec. 2, 1943.

MOTOR TORPEDO BOATS

Through Dec. 1, 1943, 13 PTs had been acknowledged as lost, chiefly in the Pacific.

FAST MINESWEEPERS

WASMUTH, DMS-15 (ex-DD-338, 1920), 1,190 tons. A converted flush-deck destroyer of World War I, abandoned in Alaskan waters, Dec. 27, 1942, when a storm set off two of her own depth charges, blowing open her stern.

MINESWEEPERS

BITTERN, AM-36 (1919), 840 tons. Destroyed just before fall of Bataan to prevent capture by the enemy, April, 1942.

FINCH, AM-9 (1918), 840 tons. Sunk by enemy air attacks, Corregidor, April, 1942.

PENGUIN, AM-33 (1918), 840 tons. Sunk in action at Guam, Dec. 8, 1941.

QUAIL, AM-15 (1918), 840 tons. Damaged by enemy gunfire and sunk by U. S. forces to prevent capture, Corregidor, early May, 1942.

SENTINEL, AM-113 (1941), 700 tons. Lost July, 1943, in Sicily landing.

SKILL, AM-115 (1941), 700 tons. Sister of the *Sentinel*, sunk in Gulf of Salerno by underwater explosion, Sept. 25, 1943.

TANAGER, AM-5 (1918), 840 tons. Sunk off Corregidor by enemy gunfire from Bataan, early May, 1942.

SUBMARINE TENDER

CANOPUS, AS-9 (1919), 5,975 tons. Destroyed at Bataan to prevent enemy capture, early April, 1942.

SUBMARINE RESCUE VESSELS

PIGEON, ASR-6 (ex-AM-47, 1919), 1,200 tons. Ex-minesweeper of 840-ton Bird class (displacement raised by weight of air compressors for diving and salvage operations), sunk off Corregidor, early May, 1942, to prevent capture.

REDWING, ARS-4 (ex-AM-48, 1919), 1,200 tons. Ex-Coast Guard cutter, ex-Navy Bird minesweeper, lost in Mediterranean, September, 1943.

OILERS

KANAWHA, AO-1 (1914), 4,900 tons. Sunk in Japanese air attack in Solomons, April 7, 1943.

NECHES, AO-5 (1920), 5,400 tons. Torpedoed by Japanese submarine, February, 1942.

NEOSHO, AO-23 (1939), 8,000 tons. Crippled by Japanese planes in Coral Sea, May 7, 1942, after fueling ill-fated *Lexington*; sank four days later.

PECOS, AO-6 (1921), 5,400 tons. Sunk by Japanese planes south of Java while attempting to run to safety with survivors of *Langley*; early March, 1942.

TRANSPORTS

(Army transports and transports operated by the War Shipping Administration, such as the late *President Coolidge*, are not included.)

APC-21, 230 tons. Sunk by Japanese aircraft off New Britain, Dec. 17, 1943.

COLHOUN, APD-2 (ex-DD-85, 1918), 1,060 tons. A former DD of four-stack type, converted to fast transport for Marine landing forces, sunk by Japanese bombs off Guadalcanal, late August, 1942.

EDWARD RUTLEDGE (ex-*Exeter*, 1931), 9,400 tons gross. Torpedoed off Casablanca, November, 1942.

GEORGE FOX ELLIOTT, AP-13 (1912), 8,378 tons gross. Former S.S. *City of Los Angeles*, fired by a Japanese torpedo plane which crashed into her, Guadalcanal, Aug. 8, 1942.

GREGORY, APD-3 (ex-DD-82, 1918), 1,060 tons. Another ex-DD fast transport, sunk by Japanese gunfire, Guadalcanal, Sept. 5, 1942.

JOSEPH HEWES (ex-*Excalibur*, 1930), 9,400 tons gross. Torpedoed off Rabat, November, 1942.

LITTLE, APD-4 (ex-DD-79, 1918), 1,060 tons. Ex-DD transport, sunk by enemy gunfire, Guadalcanal, Sept. 5, 1942.

McCAWLEY, AP-10 (1928), 7,712 tons gross. Ex-S.S. *Santa Barbara*, lost in Rendova landing operations, June 30, 1943.

McKEAN, APD-5 (ex-DD-90, 1918), 1,060 tons. Sunk by enemy air action in South Pacific, Nov. 17, 1943.

STORESHIP

POLLUX, AK-32 (1939), 5,085 tons. Ex-S.S. *Comet*, a Maritime Commission C-2. Wrecked in Newfoundland storm, Feb. 18, 1942.

CARGO SHIPS

LIBERTY, AK-35 (1917), 6,200 tons gross. Former Army transport turned over to Navy, torpedoed in Far East, Jan. 11, 1942.

MEIGS, AK-34 (ex-*West Laurent*, 1921), 7,358 tons gross. Also an ex-Army transport, bombed at Darwin, Feb. 19, 1942.

TUGS

NAPA, AT-32 (1919), 735 tons. Destroyed at Bataan, early April, 1942, to prevent capture by the enemy.

NAUSET, AT-89 (1941), 1,450 tons. Lost Sept. 9, 1943, in the Mediterranean.

NAVAJO, AT-64 (1939), 1,450 tons. Lost in South Pacific, Sept. 12, 1943.

SEMINOLE, AT-65 (1939), 1,450 tons. Sunk by Japanese destroyer near Tulagi, Oct. 25, 1943.

AIRCRAFT CARRIERS— COMBATANT TYPE

HORNET, CV-8 (1940), 20,000 tons. Left dead in water by Japanese air attack on morning of Oct. 26, 1942 during Battle of Santa Cruz Islands. Second attack later in day so crippled her she had to be sunk by accompanying destroyers.

LEXINGTON, CV-2 (1925), 33,000 tons. Sunk by our own forces May 7, 1942, after being completely wrecked internally by gasoline explosions resulting from leakage from bomb-ruptured gasoline lines. Damage sustained in Battle of Coral Sea. *Lexington* was first big U. S. ship lost after Pearl Harbor.

WASP, CV-7 (1939), 14,700 tons. Torpedoed by Japanese submarine in South Pacific, Sept. 15, 1942.

YORKTOWN, CV-5 (1936), 19,900 tons. Torpedoed by Japanese submarine and sunk, June 7, 1942, while being taken into tow after crippling damage from Japanese air attack in Battle of Midway.

AIRCRAFT CARRIER— ESCORT TYPE

LISCOMBE BAY (1943). Alazan Bay type escort carrier, torpedoed during American invasion of Gilbert Islands, Nov. 24, 1943.

SEAPLANE TENDERS

GANNET, AVP-8 (ex-AM-41, 1919), 840 tons. Ex-minesweeper, converted to seaplane tender. Torpedoed in Atlantic, June, 1943.

LANGLEY, AV-3 (ex-CV-1, ex-Jupiter, 1912), 11,050 tons. The first aircraft carrier in the U. S. Navy, born the collier *Jupiter*, re-rated as a seaplane tender after construction of big built-for-the-purpose "flat tops." Sunk by Japanese bombs south of Java, Feb. 27, 1942, as she steamed toward Java with a cargo of 36 Curtiss fighters which might have delayed fall of the East Indies by several weeks.

COAST GUARD CUTTERS

ACACIA (1919), 1,130 tons. Aid-to-navigation tender, shelled and sunk by a U-boat in the Caribbean, March, 1942.
ALEXANDER HAMILTON, CGC-69 (1936), 2,216 tons. Nameship of class of largest Coast Guard cutters, torpedoed by U-boat off Iceland, February, 1942; capsized and had to be sunk as menace to navigation.
ESCANA8A, CGC-35 (1932), 1,005 tons. Reported missing in North Atlantic, June 19, 1943.
MUSKEGAT (ex-S.S. *Cornish*, 1923), 1,827 tons. Reported missing in Atlantic, October, 1942.
NATSEK (1941), 225 tons gross. Reported missing in North Atlantic, Jan. 23, 1943.
WILCOX (ex-fishing vessel). Lost in storm off U. S. Atlantic coast, Sept. 30, 1943.

GREAT BRITAIN-WAR LOSS

BATTLESHIPS

BARHAM (1914), 31,100 tons. Torpedoed by German submarine in Mediterranean, Nov. 25, 1941.
PRINCE OF WALES (1939), 35,000 tons. Sunk by Japanese aerial torpedoes off Indo-China, Dec. 10, 1941.
ROYAL OAK (1914), 29,150 tons. Torpedoed by German submarine which slipped into Scapa Flow anchorage, Oct. 14, 1939.

BATTLE CRUISERS

HOOD (1918), 42,100 tons. Sunk in action with *Bismarck* in Denmark Strait, May 24, 1941; one of *Bismarck's* first shots penetrated her barbettes, blowing her magazines, same fate as suffered by British battle cruisers in Battle of Jutland.
REPULSE (1916), 32,000 tons. Sunk by Japanese aerial torpedoes off Indo-China coast, Dec. 10, 1941. Japanese reported to be refloating and repairing her.

CRUISERS

BONAVENTURE (1939), 5,450 tons. A Dido, torpedoed by German submarine, April 15, 1941.
CAIRO (1918), 4,200 tons. Disabled by enemy submarine in Mediterranean, Aug. 12, 1942; had to be sunk by British.
CALCUTTA (1918), 4,200 tons. Sunk by German planes during British evacuation of Crete, May 30, 1941.
CALYPSO (1917), 4,180 tons. Torpedoed by Italian submarine in Mediterranean, June, 1940.
CHARYBDIS (1940), 5,450 tons. A Dido, torpedoed by German MTBs in English Channel, Oct. 23, 1943.

CORNWALL (1926), 10,000 tons. Sunk by Japanese air attack in Indian Ocean, April 5, 1942.
COVENTRY (1917), 4,290 tons. Lost Oct. 9, 1942.
CURLEW (1917), 4,290 tons. Sunk by German air attack in Norwegian fjord, May, 1940.
DORSETSHIRE (1929), 9,975 tons. Sunk by Japanese air attack in Indian Ocean, April 5, 1942.
DUNEDIN (1918), 4,850 tons. Torpedoed by German submarine in Atlantic, Dec. 17, 1941.
EDINBURGH (1938), 10,000 tons. Sister of *Belfast*, sunk by British forces after crippling air attacks by German planes, off Norway, May 2, 1942.
EFFINGHAM (1921), 9,550 tons. Lost on uncharted rock off Norway, May 21, 1940.
EXETER (1929), 8,390 tons. Sunk by Japanese surface forces in Java Sea, March 1, 1942.
FIJI (1939), 8,000 tons. Original nameship of Mauritius class, sunk by German planes off Crete, May 22, 1941.
GALATEA (1934), 5,220 tons. Torpedoed by German submarine off Libya, Dec. 15, 1941.
GLOUCESTER (1937), 9,600 tons. Sunk by German planes off Crete, May 22, 1941.
HERMIONE (1939), 5,450 tons. A Dido, torpedoed by submarine in Mediterranean, July 3, 1942.
MANCHESTER (1937), 9,400 tons. Torpedoed by Italian MTB off Tunisia, Aug. 12, 1942.
NAIAD (1939), 5,450 tons. A Dido, lost March 30, 1942.
NEPTUNE (1933), 7,175 tons. Struck a mine off Libya, Dec. 19, 1941.
SOUTHAMPTON (1936), 9,100 tons. Fired by German air attack in Mediterranean, Jan. 10, 1941, in same action in which *Illustrious* was crippled.
SPARTAN. New cruiser of unspecified type, reported lost Feb. 29, 1944.
TRINIDAD (1939), 8,000 tons. A Mauritius, lost June 1, 1942.
YORK (1928), 8,250 tons. Sunk by German aircraft in Suda Bay, Crete, May 29, 1941.

DESTROYERS

ACASTA (1929), 1,350 tons. Sunk off Norway by *Scharnhorst* or *Gneisenau*, June 8, 1940.
ACHATES (1929), 1,350 tons. Damaged and foundered as result of convoy action, Dec. 31, 1942.
ACHERON (1930), 1,350 tons. Lost, December, 1940.
AFRIDI (1937), 1,870 tons. Sunk by German planes off Norway, May 5, 1940.
ARDENT (1929), 1,230 tons. Sunk off Norway by *Scharnhorst* or *Gneisenau*, June 8, 1940.
BASILISK (1930), 1,360 tons. Sunk by German planes at Dunkerque, June 1, 1940.
BATH (ex-Hapewell, DD-181, 1918), 1,060 tons. One of U. S. four-stackers traded to Great Britain and manned by Norwegian navy. Lost August, 1941.
BEDOUIN (1937), 1,870 tons. Sunk in convoy action in Mediterranean, July 3, 1942.
BELMONT (ex-Satterlee, DD-190, 1918), 1,190 tons. One of traded U. S. four-stackers, lost Feb. 27, 1942.
BLANCHE (1930), 1,360 tons. Mined in North Sea, Nov. 13, 1939.

BRAZEN (1930), 1,360 tons. Damaged by air attack and foundered in tow, July 21, 1940.
BROADWATER (ex-Mason, DD-191, 1919), 1,190 tons. Another traded U. S. four-stacker, torpedoed in Atlantic, October, 1941.
BROKE (1920), 1,480 tons. Flotilla leader, lost from damage sustained in forcing Algiers boom, Nov. 8, 1942.
CAMPBELTOWN (ex-Buchanan, DD-131, 1919), 1,090 tons. Former U. S. four-stacker, expended March 28, 1942, in blowing up harbor lock gates at St. Nazaire.
COSSACK (1937), 1,870 tons. Torpedoed in Atlantic, Nov. 11, 1941.
DAINTY (1932), 1,375 tons. Lost March, 1941.
DARING (1932), 1,365 tons. Torpedoed by submarine, Feb. 18, 1940.
DEFENDER (1932), 1,375 tons. Sunk near Tobruk, August, 1941.
DELIGHT (1932), 1,375 tons. Sunk near Dover by German planes, July 29, 1940.
DIAMOND (1932), 1,375 tons. Sunk by planes in Gulf of Nauplia, April 27, 1941.
DUCHESS (1932), 1,375 tons. Sunk by collision, Dec. 13, 1939.
ECLIPSE (1934), 1,375 tons. Lost Nov. 12, 1943.
ELECTRA (1934), 1,375 tons. Sunk by Japanese surface forces in Java Sea battle, Feb. 27, 1942.
ENCOUNTER (1934), 1,375 tons. Missing, Java Sea, March 1, 1942.
ESCORT (1934), 1,375 tons. Torpedoed in Mediterranean, July, 1940.
ESK (1934), 1,375 tons. Mined or torpedoed, North Sea, Sept. 1, 1940.
EXMOUTH (1934), 1,475 tons. Mined or torpedoed, North Sea, Jan. 21, 1940.
FEARLESS (1934), 1,375 tons. Torpedoed in Mediterranean, July 23, 1941.
FIREDRAKE (1934), 1,350 tons. Lost Jan. 4, 1943.
FORESIGHT (1934), 1,350 tons. Crippled by German planes in Mediterranean and sunk by British, Aug. 12, 1942.
GIPSY (1935), 1,335 tons. Mined in North Sea, Nov. 21, 1939.
GLOWWORM (1935), 1,345 tons. Sunk off Norway by German surface forces, April 8, 1940.
GRAFTON (1935), 1,335 tons. Torpedoed by German MTB off Dunkerque, May 29, 1940.
GRENADE (1935), 1,335 tons. Sunk by German planes, Dunkerque, May 29, 1940.
GRENVILLE (1935), 1,485 tons. Mined or torpedoed, North Sea, Jan. 20, 1940.
GREYHOUND (1935), 1,335 tons. Sunk by planes off Crete, May 22, 1941.
GURKHA (1937), 1,870 tons. Damaged by planes and foundered off Norway, April 8, 1940.
GURKHA (ex-Larne, 1940), 1,920 tons. Lost Feb. 19, 1942.
HARDY (1936), 1,505 tons. Damaged by German destroyers at Narvik, April 10, 1940, and foundered.
HARDY (second vessel of name). Reported missing Feb. 24, 1944.
HARVESTER (ex-Handy, ex-Jurua, 1939), 1,340 tons. Torpedoed in Atlantic, March, 1943.
HASTY (1936), 1,340 tons. Lost in Central Mediterranean, July 3, 1942.
HAVANT (ex-Brazilian vessel, 1939), 1,340 tons. Sunk by planes at Dunkerque, June 1, 1940.
HAVOCK (1936), 1,340 tons. Wrecked off Tunisia, April 7, 1940.

HEREWARD (1936), 1,340 tons. Sunk off Crete by planes, June 9, 1941.
 HOSTILE (1936), 1,340 tons. Mined in Mediterranean, August, 1940.
 HUNTER (1936), 1,340 tons. Sunk by German destroyers at Narvik, April 10, 1940.
 HURRICANE (1940?), 1,340 tons. Lost, Jan. 13, 1944.
 HYPERION (1936), 1,340 tons. Crippled by underwater explosion, Adriatic, January, 1941, and sunk by British.
 IMOGEN (1936), 1,370 tons. Sunk by collision, July, 1940.
 IMPERIAL (1936), 1,370 tons. Sunk off Crete by planes, June 9, 1941.
 INTREPID (1936), 1,370 tons. Lost Oct. 9, 1943.
 IVANHOE (1937), 1,370 tons. Mined, North Sea, Sept. 1, 1940.
 JACKAL (193B), 1,690 tons. Sunk by planes in Mediterranean, May 11, 1942.
 JAGUAR (193B), 1,690 tons. Lost May 6, 1942.
 JANUS (193B), 1,690 tons. Reported lost Feb. 20, 1944.
 JERSEY (193B), 1,690 tons. Mined, June, 1941.
 JUNO (193B), 1,690 tons. Sunk by planes off Crete, May 20, 1941.
 JUPITER (193B), 1,690 tons. Torpedoed in Battle of Java Sea, Feb. 27, 1942.
 KANDAHAR (1939), 1,690 tons. Mined off Libya, Dec. 19, 1941.
 KASHMIR (1939), 1,690 tons. Sunk off Crete by German planes, May 22, 1941.
 KEITH (1930), 1,400 tons. Sunk by planes off Dunkergue, June 1, 1940.
 KELLY (193B), 1,695 tons. Sunk off Crete by planes, May 22, 1941.
 KIPLING (1939), 1,690 tons. Sunk by planes in Mediterranean, May 11, 1942.
 LIGHTNING (1940), 1,920 tons. Lost March 21, 1943.
 LIVELY (1940), 1,920 tons. Sunk by planes in Mediterranean, May 11, 1942.
 MARTIN (1941), 1,920 tons. Sunk at Algiers, November, 1942.
 MASHONA (1937), 1,870 tons. Sunk by planes, May 28, 1941.
 MATABELE (1937), 1,870 tons. Lost Feb. 8, 1942.
 MOHAWK (1937), 1,870 tons. Torpedoed by Italian destroyers in Mediterranean, April 15, 1941.
 PAKENHAM (1941). Lost May 10, 1943.
 PANTHER (1942). Lost Oct. 19, 1943.
 PARTRIDGE (1941). Lost Jan. 15, 1943.
 QUENTIN (1942). Sunk by planes, Dec. 2, 1942.
 SIKH (1937), 1,870 tons. Sunk by shore batteries in raid on Tobruk, Sept. 14, 1942.
 SOMALI (1937), 1,870 tons. Torpedoed off Murman coast and foundered in tow, September, 1942.
 STANLEY (ex-McCalla, DD-253, 1919), 1,190 tons. Torpedoed in Atlantic, December, 1941.
 STRONGHOLD (1919), 905 tons. Sunk in Java Sea, March 1, 1942.
 STURDY (1918), 905 tons. Storm-wrecked off Scotland, November, 1940.
 THANET (1918), 905 tons. Sunk by Japanese surface forces off Malaya, Jan. 26, 1942.
 THRACIAN (1920), 905 tons. Blown up at Hongkong to prevent capture, December, 1941. Japanese reported to have salvaged her.
 VALENTINE (1917), 900 tons. Damaged by planes and beached on Dutch coast, May 15, 1940.
 VENETIA (1917), 1,090 tons. Mined, Oct. 19, 1940.
 VETERAN (1919), 1,120 tons. Lost Oct. 30, 1942.

VIMIERA (1917), 900 tons. Lost January, 1942.
 VORTIGERN (1917), 1,090 tons. Torpedoed by German MTB, March 28, 1942.
 WAKEFUL (1917), 900 tons. Sunk by planes, Dunkergue, May 30, 1940.
 WARWICK (1917), 1,100 tons. Reported lost March 1, 1944.
 WESSEX (1918), 1,100 tons. Sunk by planes off France, May 28, 1940.
 WHIRLWIND (1917), 1,100 tons. Torpedoed July, 1940.
 WHITLEY (1918), 900 tons. Damaged by planes and beached on Dutch coast, May 20, 1940.
 WILD SWAN (1919), 1,120 tons. Damaged by planes off French Atlantic coast and foundered in tow, June 17, 1942.
 WREN (1919), 1,120 tons. Sunk by planes, July 28, 1940.
 WRYNECK (191B), 900 tons. Sunk by planes, Gulf of Nauplia, April 27, 1941.
 ZULU (1937), 1,870 tons. Sunk by shore batteries during raid on Tobruk, Sept. 14, 1942.

ESCORT DESTROYERS

AIREDALE (1940), 904 tons. Lost in central Mediterranean convoy action, July 3, 1942.
 BERKELEY (1940), 940 tons. Disabled during Dieppe raid, Aug. 19, 1942, and sunk by British forces.
 BLEAN (1941), 904 tons. Lost Jan. 1, 1943.
 DULVERTON (1941), 904 tons. Lost Dec. 8, 1943.
 ESKDALE, 904 tons. Manned by Norwegian navy. Loss reported April 28, 1943.
 EXMOOR (1940), 904 tons. Torpedoed by German MTB, Feb. 28, 1941.
 GROVE (1941), 904 tons. Lost in Mediterranean, July 3, 1942.
 HEYTHROP (1940), 904 tons. Lost April 3, 1942.
 HOLCOMBE, 904 tons. Reported lost Jan. 26, 1944.
 HURWORTH, 904 tons. Lost late 1943.
 LIMBOURNE, 904 tons. Damaged by German MTBs Oct. 23, 1943, and sunk by British forces.
 PENYLAN (1941), 904 tons. Lost Dec. 13, 1942.
 PUCKERIDGE (1940), 904 tons. Lost Sept. 9, 1943.
 SOUTHWOLD (1940), 904 tons. Lost April 26, 1942.
 TYNEDEALE (1940), 904 tons. Lost Jan. 20, 1944.

FRIGATES

ITCHEN. Lost Oct. 1, 1943.

CORVETTES

ALYSSE (ex-Alyssum). Manned by Fighting French. Torpedoed in North Atlantic, Feb. 22, 1942.
 ARBUTUS. Lost March 20, 1942.
 AURICULA. Mined off Madagascar, May 5, 1942.
 ERICA. Lost Feb. 28, 1943.
 FLEUR DE LYS (1940). Torpedoed by German U-boat, Oct. 17, 1941.
 GARDENIA. Lost off Algiers, November, 1942.
 GLADIOLUS (1940). Lost Nov. 6, 1941.
 HOLLYHOCK. Lost May 17, 1942.
 MARIGOLD. Lost Jan. 13, 1942.

MIMOSA. Manned by Fighting French. Lost July 1, 1942.
 MONTBRETIA. Manned by Norwegian navy. Lost Dec. 5, 1942.
 PICOTEE (1940). Lost Aug. 26, 1941.
 PINTAIL (193B), 800 tons. Lost July 1, 1941.
 POLYANTHUS. Loss announced Oct. 1, 1943.
 SALVIA (1940). Lost Jan. 11, 1942.
 SAMPHIRE (1940). Lost Feb. 22, 1943.
 SPIKENARD (1940). Loaned to Canadian Navy. Lost Feb. 19, 1942.
 SNAPDRAGON. Lost Jan. 2, 1943.
 WINDFLOWER (1940). Loaned to Canadian Navy. Lost in collision, December, 1941.
 ZINNIA (1940). Lost August, 1941.

SLOOPS

AUCKLAND (193B), 1,200 tons. Sunk by planes off Tobruk, July, 1941.
 BITTERN (1937), 1,190 tons. Bombed at Namsos, May 1, 1940.
 CULVER (ex-Mendota, 1929), 1,983 tons. Former U. S. Coast Guard cutter transferred to Great Britain, lost Feb. 15, 1942.
 DUNDEE (1932), 1,060 tons. Foundered after being torpedoed by U-boat, September, 1940.
 EGRET (1938), 1,200 tons. Lost Sept. 3, 1943.
 GRIMSBY (1933), 990 tons. Bombed off Tobruk, June, 1941.
 HARTLAND (ex-Ponchartrain, 1929), 1,983 tons. Former U. S. Coast Guard cutter transferred to Great Britain, lost Nov. 8, 1942, forcing entry to Oran.
 IBIS (1940), 1,250 tons. Bombed off Algiers, November, 1942.
 PENZANCE (1930), 1,025 tons. Torpedoed by submarine, Aug. 29, 1940.
 WALNEY (ex-Sebago, 1930), 1,975 tons. Former U. S. Coast Guard cutter transferred to Great Britain, lost Nov. 8, 1942, forcing entry to Oran.

ARMED MERCHANT CRUISERS

ANDANIA (1922), 13,950 tons gross. Torpedoed by submarine, June 16, 1940.
 CARINTHIA (1925), 20,277 tons gross. Torpedoed by German U-boat, June 8, 1940.
 DUNVEGAN CASTLE (1936), 15,007 tons gross. Torpedoed by submarine, August, 1940.
 FORFAR (ex-Montrose, 1922), 16,402 tons gross. Torpedoed by submarine, December, 1940.
 JERVIS BAY (1922), 14,164 tons gross. Sunk by German armored ship, Nov. 5, 1940.
 LAURENTIC (1927), 18,724 tons gross. Torpedoed by submarine, November, 1940.
 PATROCLUS (1923), 11,314 tons gross. Torpedoed by submarine, November, 1940.
 RAJPUTANA (1916), 16,644 tons gross. Torpedoed by submarine in Atlantic, April 23, 1941.
 RAWALPINDI (1925), 16,697 tons gross. Sunk by German battleship, Nov. 23, 1939.
 SALOPIAN (ex-Shropshire, 1926), 10,526 tons gross. Lost June 1, 1941.
 SCOTSTOUN (ex-Caledonia, 1925), 17,046 tons gross. Torpedoed by submarine, June 13, 1940.
 TRANSYLVANIA (1925), 16,923 tons gross. Torpedoed by submarine, August, 1940.

VANDYCK (1921), 13,241 tons gross. Bombed off Norway, June 10, 1940.
VOLTAIRE (1923), 13,245 tons gross. Reported missing May 3, 1941.

A. A. ESCORT

TYNWALD (1937), 2,376 tons gross. Lost off Algeria, November, 1942.

SUBMARINES

CACHALOT (1937), 1,520 tons. Rammed by Italian torpedo boat, August, 1941.
GRAMPUS (1936), 1,520 tons. Missing, June, 1940.
H-31 (1918), 410 tons. Reported missing Jan. 23, 1942.
H-49 (1919), 410 tons. Missing, November, 1940.
NARWHAL (1935), 1,520 tons. Missing, August, 1940.
ODIN (1928), 1,475 tons. Missing, August, 1940.
OLYMPUS (1928), 1,475 tons. Reported missing June 13, 1942.
ORPHEUS (1929), 1,475 tons. Missing, August, 1940.
OSWALD (1928), 1,475 tons. Sunk by Italian destroyer in Ionian Sea, August, 1940.
OXLEY (1926), 1,354 tons. Accidentally blown up, September, 1939.
P-32 (1940). Reported missing Sept. 17, 1941.
P-33 (1940). Reported missing Sept. 6, 1941.
P-36 (1940). Reported missing March 28, 1942.
P-48. Reported missing Feb. 10, 1943.
P-222. Reported missing Jan. 31, 1943.
P-311. Reported missing March 11, 1943.
P-615. Reported missing July 29, 1943.
PARTHIAN (1929), 1,475 tons. Reported missing off Sicily, Aug. 28, 1943.
PERSEUS (1929), 1,475 tons. Believed sunk by Italian submarine *Enrico Toti*, Jan. 13, 1942.
PHOENIX (1929), 1,475 tons. Missing, August, 1940.
RAINBOW (1930), 1,475 tons. Missing, November, 1940.
REGENT (1930), 1,475 tons. Reported missing May 29, 1943.
REGULUS (1930), 1,475 tons. Missing, January, 1941.
SAHIB, 670 tons. Reported missing off northern Sicily, May 6, 1943.
SALMON (1934), 670 tons. Missing, July, 1940.
SARACEN, 670 tons. Reported missing off Sicily, Aug. 28, 1943.
SEAHORSE (1932), 640 tons. Missing, January, 1940.
SEAL (1938), 1,520 tons. Missing, May, 1940; reported captured by Germans and refitted for enemy use.
SHARK (1934), 670 tons. Missing, July, 1940.
SIMOOM (probably a Sealion). Reported missing Feb. 14, 1944.
SNAPPER (1934), 670 tons. Reported missing, March 16, 1941.
SPEARFISH (1936), 670 tons. Missing, August, 1940.
SPLENDID, 670 tons. Reported missing, May 15, 1943.
STARFISH (1933), 640 tons. Missing, January, 1940.
STERLET (1937), 670 tons. Missing, April, 1940.
SWORDFISH (1931), 640 tons. Missing, December, 1940.
TALISMAN (1939), 1,090 tons. Reported missing, Nov. 15, 1942.
TARPON (1939), 1,090 tons. Missing, April, 1940.
TEMPEST (1940), 1,090 tons. Reported missing, April 7, 1942.

TETRARCH (1939), 1,090 tons. Reported missing, Dec. 13, 1941.
TETRARCH (second ship of name, 1942), 1,090 tons. Reported missing, April 14, 1942.
THAMES (1932), 1,805 tons. Missing, September, 1940.
THISTLE (1938), 1,090 tons. Missing, April, 1940.
THORN (1940), 1,090 tons. Reported missing, Sept. 27, 1942.
THUNDERBOLT (ex-*Thetis*, 1938), 1,090 tons. Reported missing, April 21, 1943.
TIGRIS (1939), 1,090 tons. Reported missing, April 4, 1943.
TRAVELLER (1940), 1,090 tons. Reported missing, Jan. 23, 1943.
TRIAD (1939), 1,090 tons. Missing, November, 1940.
TRITON (1937), 1,095 tons. Reported sunk January, 1941, by Italian torpedo boat *Confianza*.
TRIUMPH (1938), 1,090 tons. Reported missing, Feb. 5, 1942.
TROOPER, 1,090 tons. Reported missing, Nov. 26, 1943.
TURBULENT, 1,090 tons. Reported missing, May 3, 1943.
UNBEATEN (1940), 540 tons. Reported missing, Dec. 16, 1942.
UNDAUNTED (1940), 540 tons. Reported missing, June 6, 1941.
UNDINE (1937), 540 tons. Missing, January, 1940.
UNION (1940), 540 tons. Missing, August, 1941.
UNIQUE (1940), 540 tons. Reported missing, Dec. 6, 1942.
UPHOLDER (1940), 540 tons. Lost, Aug. 22, 1942.
URGE (1940), 540 tons. Lost, Sept. 19, 1942.
USK (1940), 540 tons. Missing, May, 1941.
USURPER (1940), 540 tons. Reported missing, Nov. 17, 1943.
UTMOST (1940), 540 tons. Reported missing, Jan. 10, 1943.
Four midget submarines, names unreported, lost in attack on *Tirpitz*, Sept. 22, 1943.

MONITOR

TERROR (1916), 7,200 tons. Bombed off Libya, April, 1940.

MOTOR TORPEDO BOATS

Through Dec. 1, 1943, the Admiralty had acknowledged loss of ten to thirteen MT8s.

MOTOR GUN BOATS

Through Dec. 1, 1943, the Admiralty had acknowledged loss of four to seven MT8s.

MINELAYERS

ABDIEL (1940), 2,650 tons. Of *Manxman* class, lost Oct. 12, 1943.
LATONA (1940), 2,650 tons. Of *Manxman* class, lost Nov. 20, 1941.
PRINCESS VICTORIA (1939), 2,500 tons gross. Auxiliary mine-layers, mined May 21, 1943.
REDSTART (1938), 498 tons. Coastal minelayer, lost at Hongkong, December, 1941.
WELSHMAN (1940), 2,650 tons. Lost, March 5, 1943.

FLEET MINESWEEPERS

ALGERINE. Lost off Algeria, November, 1942.
8RAM8LE (1938), 875 tons. Missing in convoy action off Murman coast, Dec. 31, 1942.

CROMARTY, 750 tons. Lost, Nov. 16, 1943.
CROMER. Lost, Dec. 11, 1942.
DUNDALK (1919), 710 tons. Mined, October, 1940.
DUNOON (1919), 710 tons. Mined, April 30, 1940.
FITZROY (1919), 710 tons. Lost, June 18, 1942.
HUNTLEY (ex-*Helmsdale*, 1919), 710 tons. Lost Feb. 18, 1941.
LEDA (1937), 815 tons. Torpedoed during convoy action off Murman coast, September, 1942.
SKIPJACK (1934), 815 tons. Lost at Dunkerque, June 1, 1940.
SPHINX (1939), 875 tons. Damaged by bombs and capsized in storm, Feb. 3-4, 1940.

AUXILIARY MINESWEEPERS

BRIGHTON BELLE (1900), 396 tons gross. Lost at Dunkerque, May-June, 1940.
BRIGHTON QUEEN (1905), 807 tons gross. Lost at Dunkerque, May-June, 1940.
CRESTED EAGLE (1925), 1,110 tons gross. Lost at Dunkerque, May 29, 1940.
GRACIE FIELDS (1936), 393 tons gross. Lost at Dunkerque, May 29, 1940.
SNAEFELL (ex-*Waverley*, ex-*Barry*, 1907), 466 tons gross. Lost, August 18, 1941.
WAVERLEY (1899), 537 tons gross. Lost at Dunkerque, May 29, 1940.
NO. 39. Lost, Aug. 18, 1941.

RIVER GUNBOATS

CICALA (1915), 625 tons. Lost at Hongkong, December, 1941.
DRAGONFLY (1938), 585 tons. Lost at Singapore, February, 1942.
GRASSHOPPER (1939), 585 tons. Lost at Singapore, February, 1942.
LADY8IRD (1915), 625 tons. Bombed at Tobruk, May 12, 1941.
MOSQUITO (1940), 585 tons. Lost at Dunkerque, June 1, 1940.
MOTH (1915), 625 tons. Sunk at Hongkong, December, 1941. Reported to have been salvaged by Japanese.
PETEREL (1927), 310 tons. Sunk by *Idumo* at Shanghai, Dec. 8, 1941.
ROBIN (1934), 226 tons. Lost at Hongkong, December, 1941.
SCORPION (1937), 700 tons. Sunk at Singapore to avoid capture, February, 1942.

ARMED YACHTS

CAMPEADOR V (1938). Mined, June 22, 1940.
FIONA (1932). Lost, May, 1941.
GRIVE (ex-*Narcissus*, 1905). Lost at Dunkerque, May, 1940.
GULZAR (1934). Bombed at Dover, July 29, 1940.
MOLLUSC. Lost, March, 1941.
ROSABELLE (1901). Lost, December, 1941.
ROSAURA (1905). Lost, April, 1941.
SAPPHO (1935). Mined, Sept. 29, 1940.
TORRENT. Lost, April, 1941.
VIVA II (1929). Lost, May, 1941.
WARRIOR II (1904). Bombed, July, 1940.
WILNA (1939). Lost, April, 1941.

TRAWLERS

ADONIS. Lost, April 21, 1943.
 ADVENTURINE. Reported lost, Dec. 31, 1943.
 AKRANES (1929), 358 tons gross. Lost, July 10, 1941.
 ALMOND (1940), 600 tons. Lost, Feb. 9, 1941.
 AMETHYST (1934), 627 tons. Mined, December, 1940.
 ARAGONITE (1934), 315 tons gross. Mined, Nov. 22, 1939.
 ARCTIC TRAPPER (1928), 352 tons gross. Lost, Feb. 9, 1941.
 ARGYLLSHIRE (1938), 540 tons gross. Lost at Dunkerque, May-June, 1940.
 ASH (1940), 600 tons. Lost, July 10, 1941.
 ASTON VILLA (1937), 546 tons gross. Bombed off Norway, scuttled, May, 1940.
 BEDFORDSHIRE (1935), 443 tons gross. Reported missing, June 8, 1942.
 BEN GAIRN (1916), 234 tons gross. Lost, June 5, 1941.
 BENGALI (1937), 455 tons gross. Accidentally burned at Lagos, Dec. 5, 1942.
 BENVOLIO (1930), 352 tons gross. Mined, Feb. 23, 1940.
 BLACKBURN ROVERS (1934), 422 tons gross. Lost at Dunkerque, May-June, 1940.
 BOTANIC (1912), 214 tons gross. Lost, March 26, 1942.
 BRADMAN (1937), 452 tons gross. Bombed, Norway, April, 1940.
 BREDON. Lost, Feb. 26, 1943.
 CALVERTON (1913), 214 tons gross. Mined, December, 1940.
 CALVI (1930), 363 tons gross. Lost at Dunkerque, May-June, 1940.
 CAMPINA (1913), 289 tons gross. Mined, July 21, 1940.
 CANNA. Lost in accidental fire at Lagos, Dec. 5, 1942.
 CAPE CHELYUSKIN (1936), 494 tons gross. Bombed, Norway, May, 1940.
 CAPE FINISTERRE (1939), 591 tons gross. Foundered from bomb damage, Aug. 2, 1940.
 CAPE PASSARO (1939), 590 tons gross. Bombed, May 28, 1940.
 CAPE SIRETOKO (1939), 590 tons gross. Bombed, Norway, April, 1940.
 CAPE SPARTEL (1929), 346 tons gross. Lost, Feb. 4, 1942.
 CHARLES BOYES (1918), 200 tons gross. Mined, May 26, 1940.
 CHESTNUT (1940), 600 tons. Lost, January, 1941.
 COBBERS (1919), 276 tons gross. Lost, March, 1941.
 COCKER (1936), 305 tons gross. Lost, July 20, 1942.
 COMET (1924), 301 tons gross. Mined, October, 1940.
 CROMOND ISLAND (1910), 180 tons gross. Lost, April 5, 1941.
 CRESTFLOWER (1930), 367 tons gross. Bombed and foundered, July 20, 1940.
 DESIREE (1912), 213 tons gross. Lost, January, 1941.
 DRUMMER (1915), 297 tons gross. Mined, August, 1940.
 DUNGENESS (1914), 263 tons gross. Lost through bomb damage, November, 1940.
 ELIZABETH ANGELA (1928), 253 tons gross. Bombed, August, 1940.
 ELK (1902), 181 tons gross. Mined, December, 1940.
 EMILION (1914), 201 tons gross. Lost, Oct. 29, 1941.
 ETHEL TAYLOR (1917), 276 tons gross. Mined, December, 1940.
 EVELINA (1919), 202 tons gross. Missing, December, 1939.
 EVESHAM (1915), 239 tons gross. Lost, June 8, 1941.
 FIFESHIRE (1938), 540 tons gross. Bombed, Feb. 20, 1940.
 FLEMING (1929), 356 tons gross. Bombed, July 25, 1940.

FONTENOY (1918), 276 tons gross. Lost through damage sustained in air attack, November, 1940.
 FORT ROYAL (1931), 351 tons gross. Bombed, Feb. 9, 1940.
 FORTUNA (1906), 259 tons gross. Lost, April 14, 1941.
 FRANCOLIN (1916), 322 tons gross. Bombed, Nov. 12, 1941.
 FRANC TIREUR. Sunk by E-boats, Sept. 25, 1943.
 GAUL (1936), 531 tons gross. Bomb-damaged and scuttled, Norway, May, 1940.
 GULFOSS (1929), 358 tons gross. Lost, March 21, 1941.
 HAMMOND (1936), 452 tons gross. Bombed, Namsos, April 20, 1940.
 HENRIETTE (1919), 204 tons gross. Lost, Jan. 20, 1942.
 HICKORY (1940), 600 tons. Mined, November, 1940.
 HORATIO (1940). Lost, Jan. 17, 1943.
 IRVANA (1919), 276 tons gross. Lost, Jan. 20, 1942.
 JAMES LUDFORD (1918), 506 tons. Mined, Dec. 15, 1939.
 JARDINE (1936), 452 tons gross. Bomb-crippled and scuttled, Norway, May, 1940.
 JASPER (1932), 581 tons. Lost, Dec. 12, 1942.
 JOSEPH BUTTON (1918), 290 tons gross. Mined, October, 1940.
 JURA (1935), 197 tons gross. Lost, Jan. 17, 1943.
 JUNIPER (1940), 600 tons. Sunk off Norway by German cruiser, June, 1940.
 KENNYMORE (1914), 225 tons gross. Lost, January, 1941.
 KERYADO (1920), 252 tons gross. Lost, March 21, 1941.
 KINGSTON ALALITE (1933), 412 tons gross. Mined, November, 1940.
 KINGSTON BERYL (1928), 356 tons gross. Missing, Jan. 6, 1944.
 KINGSTON CEYLONITE (1935), 448 tons gross. Lost, July 20, 1942.
 KINGSTON CORNELIAN (1934), 449 tons gross. Sunk by collision off Gibraltar, Jan. 5, 1940.
 KINGSTON GALENA (1934), 415 tons gross. Bombed, July, 1940.
 KINGSTON JACINTH (1929), 356 tons gross. Lost, Jan. 26, 1943.
 KINGSTON SAPPHIRE (1929), 356 tons gross. Sunk by U-boat, October, 1940.
 KOPANES (1914), 351 tons gross. Lost, May 12, 1941.
 KOS XXI (ex-Norwegian whaler, 1937), 353 tons gross. Lost, Oct. 29, 1941.
 LADY LILIAN (1939), 581 tons gross. Lost, March 27, 1941.
 LADY SHIRLEY (1937), 472 tons gross. Missing, January, 1942.
 LAERTES (1940). Lost, Aug. 28, 1942.
 LARWOOD (1936), 452 tons gross. Bombed, Norway, April, 1940.
 LISTRAC (1907), 778 tons gross. Lost, October, 1940.
 LOCH ALSH (1926), 358 tons gross. Lost, Feb. 4, 1942.
 LOCH ASSATER (1910), 210 tons gross. Mined, March 23, 1940.
 LOCH DOON (1937), 534 tons gross. Missing, December, 1939.
 LOCH INVER (1930), 356 tons gross. Missing, October, 1940.
 LORD HAILSHAM (1934), 445 tons gross. Lost, March 6, 1943.
 LORD INCHCAPE (1924), 338 tons gross. Mined, November, 1940.
 LORD SELBORNE (1917), 247 tons gross. Lost, April 9, 1941.
 LORD STAMP (1935), 448 tons gross. Mined, October, 1940.
 LORD STONEHAVEN (1934), 444 tons gross. Lost, Oct. 25, 1942.
 LUDA LADY (1914), 234 tons gross. Lost, Feb. 4, 1941.
 MAIDA (ex-Chestnut, 1914), 107 tons gross. Mined, March 16, 1940.
 MANOR (1913), 314 tons. Lost, Aug. 28, 1942.
 MANX PRINCE (1910), 221 tons gross. Lost, January, 1941.

MARSONA (1918), 276 tons gross. Mined, August, 1940.
 MASTIFF (1938), 530 tons. Mined, November, 1939.
 MELBOURNE (1936), 466 tons gross. Bombed off France, May, 1940.
 MEROR. Lost, Oct. 6, 1943.
 MILFORD EARL (1919), 290 tons gross. Bombed, Dec. 14, 1941.
 MORAVIA (1917), 306 tons. Lost, March 26, 1943.
 MYRTLE (1929), 550 tons. Mined, June 14, 1940.
 NOGI (1923), 299 tons gross. Bombed, June 24, 1941.
 NORTHERN ROVER (1936), 655 tons gross. Missing, November, 1939.
 NOTTS COUNTY (1938), 541 tons gross. Lost, April 15, 1942.
 OCEAN SUNLIGHT (1929), 131 tons gross. Mined, June 14, 1940.
 ORFSAY, 450 tons gross. Lost, Nov. 16, 1943.
 ORMONDE (1906), 250 tons gross. Lost, Feb. 23, 1941.
 OSWALDIAN (1917), 249 tons gross. Mined, August, 1940.
 OUSE (1918), 462 tons. Lost, March 3, 1941.
 PELTON (1925), 358 tons gross. Lost, Jan. 30, 1941.
 PERIDOT (ex-Manchester City, 1933), 398 tons gross. Mined, March 15, 1940.
 PHINEAS BEARD (1918), 278 tons gross. Lost, Dec. 14, 1941.
 POLLY JOHNSON (1919), 290 tons gross. Lost at Dunkerque, May-June, 1940.
 PYROPE (1932), 295 tons gross. Bombed, August, 1940.
 RECOIL (1938), 344 tons gross. Missing, October, 1940.
 RED GAUNTLET. Lost, Aug. 12, 1943.
 REFUNDO (1917), 258 tons gross. Lost, January, 1941.
 RELONZO (1914), 245 tons gross. Lost, Feb. 4, 1941.
 REMILLO (1917), 266 tons gross. Lost, March 8, 1941.
 RESMILO (1917), 258 tons gross. Lost, July 6, 1941.
 RESOLVO (1913), 231 tons gross. Lost, October, 1940.
 RESPARKO (1916), 248 tons gross. Bombed, Aug. 24, 1940.
 RIFSNEs (1932), 431 tons gross. Bombed, May 22, 1940.
 RINOVIA (1931), 429 tons gross. Mined, November, 1940.
 RIVER CLYDE (1919), 276 tons gross. Mined, August, 1940.
 ROBERT BOWEN (1918), 290 tons gross. Bombed, Feb. 9, 1940.
 ROCHEBONNE (1913), 258 tons gross. Lost, May 12, 1941.
 RODINO (1913), 230 tons gross. Bombed, July, 1940.
 ROSEMONDE (1910), 364 tons gross. Reported missing, March 17, 1942.
 ROYALO (1916), 248 tons gross. Mined, September, 1940.
 RUBENS (1937), 320 tons gross. Lost, March, 1941.
 RUTLANDSHIRE (1936), 458 tons gross. Bombed at Namsos, April 20, 1940.
 RYSA. Lost, Dec. 20, 1943.
 ST. GORAN (1936), 565 tons gross. Bomb-crippled and scuttled, Norway, May, 1940.
 SEA KING (1916), 321 tons gross. Mined, October, 1940.
 SEDGEFLY (ex-Norman, 1939), 520 tons gross. Missing, December, 1940.
 SEVRA (1921), 253 tons. Mined, November, 1940.
 SINDONIS (1934), 440 tons gross. Lost, June 22, 1941.
 SKUD III (1929), 243 tons gross. Lost, Sept. 26, 1941.
 SOLOMON (1928), 337 tons. Lost, May 9, 1942.
 SPANIARD (1937), 455 tons gross. Accidentally lost in fire at Lagos, Dec. 5, 1942.
 STAUNTON (1908), 283 tons gross. Mined, July 28, 1940.
 STELLA CAPELLA (1937), 507 tons gross. Missing, April, 1942.

STELLA DORADO (1935), 416 tons gross. Lost at Dunkerque, June, 1940.
 STELLA ORION (1935), 417 tons gross. Mined, November, 1940.
 STRATHBORVE (1930), 216 tons gross. Lost, Sept. 26, 1941.
 STRONSAY. Lost, Feb. 16, 1943.
 SUSARION (1917), 261 tons gross. Lost, May 18, 1941.
 TAMARISK (1925), 545 tons. Bombed, August, 1940.
 TERVANI (1930), 409 tons gross. Lost, Feb. 26, 1943.
 THOMAS BARTLETT (1918), 290 tons gross. Lost at Dunkerque, May-June, 1940.
 THORBRYN (1936), 305 tons. Lost, Aug. 30, 1941.
 THURINGIA (1939), 396 tons gross. Lost at Dunkerque, May-June, 1940.
 TILBURY NESS (1918), 279 tons gross. Lost as result of bomb damage, November, 1940.
 TOURMALINE (1935), 641 tons. Bombed, Feb. 5, 1941.
 TRANIO (1918), 275 tons gross. Lost, July 6, 1941.
 ULLSWATER. Lost, Dec. 20, 1942.
 VALDORA (1916), 251 tons gross. Missing, January, 1940.
 VELIA (1914), 290 tons gross. Mined, October, 1940.
 WARLAND (1928), 348 tons gross. Lost, March 26, 1942.
 WARWICK DEEPING (1934), 445 tons gross. Lost, October, 1940.
 WARWICKSHIRE (1936), 466 tons gross. Bombed, Norway, May, 1940.
 WASHINGTON (1909), 209 tons gross. Mined, Dec. 6, 1939.
 WATERFLY. Lost, Sept. 21, 1942.
 WAVEFLOWER (1929), 368 tons gross. Mined, October, 1940.
 WESTELLA (1934), 413 tons gross. Lost at Dunkerque, June, 1940.
 WILLIAM HALLETT (1919), 202 tons gross. Mined, Dec. 14, 1939.
 WILLIAM STEPHEN. Lost, Nov. 1, 1943.
 WILLIAM WESNEY (1930), 364 tons gross. Mined, Nov., 1940.

DRIFTERS

BOY ROY (1911), 95 tons gross. Lost at Dunkerque, May-June, 1940.
 DEVON COUNTY (1910), 86 tons gross. Lost, July, 1941.
 GIRL HELEN (1934), 63 tons gross. Mined, November, 1940.
 GIRL MARY, 25 tons net. Lost, October, 1940.
 GIRL PAMELA (1912), 93 tons gross. Lost at Dunkerque, May-June, 1940.
 HARVEST GLEANER (1918), 96 tons gross. Lost, January, 1941.
 JEWEL. Lost, June 5, 1941.
 LORD ST. VINCENT (1929), 115 tons gross. Lost, July 7, 1941.
 M. A. WEST (1919), 96 tons gross. Lost, June 22, 1941.
 OCEAN RETRIEVER. Lost, Sept. 30, 1943.
 PAXTON (1911), 92 tons gross. Lost at Dunkerque, May-June, 1940.
 RAY OF HOPE (1925), 98 tons gross. Mined, Dec. 10, 1939.
 REED (1932), 99 tons gross. Mined, November, 1940.
 SUMMER ROSE (1919), 96 tons gross. Lost, October, 1940.
 THISTLE (1904), 79 tons gross. Lost, June 8, 1941.
 UBERTY (1912), 93 tons gross. Lost, May 18, 1941.
 XMAS ROSE (1918), 96 tons gross. Mined, December, 1940.

TENDERS

HECLA (1940), 11,000 tons. Lost off Algeria, November, 1942.
 MEDWAY (1928), 14,050 tons. Lost in Mediterranean in 1942.

FLEET TUGS

ST. FAGAN (1918), 820 tons. Lost at Dunkerque, June 1, 1940.
 SAUCY (1918), 579 tons gross. Mined, October, 1940.

MISCELLANEOUS

BANKA (1914), 623 tons. Lost in Far East, December, 1941.
 BUFFALO (1916). Mooring steamer, fouled Singapore minefield, April 4, 1941.
 CAMITO (1915), 6,833 tons gross. Lost, May, 1941.
 CHAKDINA (1914), 3,033 tons gross. Torpedoed in Cabot Strait, Dec. 28, 1941.
 COMFORT, 60 tons. Dam-laying vessel, lost at Dunkerque, May-June, 1940.
 CORFIELD (1937), 1,791 tons gross. Lost, Oct. 8, 1941.
 CRISPIN (1935), 5,051 tons gross. Lost, Feb. 20, 1941.
 FIDELITY. Lost, March 17, 1943.
 KING ORRY (1913), 1,877 tons gross. Bombed at Dunkerque, May 29, 1940.
 LADY SOMERS (1929), 8,194 tons gross. Lost, July 21, 1941.
 MANISTEE (1921), 5,360 tons gross. Lost, March 13, 1941.
 MONA'S QUEEN (1934), 2,756 tons gross. Armed boarding steamer, lost at Dunkerque, May-June, 1940.
 PATIA (1922), 5,355 tons gross. Bombed, May 7, 1941.
 QUEENWORTH (1924), 2,047 tons gross. Bombed, May 22, 1941.
 SPRINGBANK (1926), 5,055 tons gross. Lost, Oct. 23, 1941.
 TONBRIDGE (1924), 682 tons gross. Lost, Sept. 11, 1941.

AIRCRAFT CARRIERS—COMBATANT

ARK ROYAL (1937), 22,000 tons. Torpedoed by German U-boat east of Gibraltar and foundered while in tow, Nov. 14, 1941.
 COURAGEOUS (1916), 22,500 tons. Torpedoed by German submarine, Sept. 17, 1939.
 EAGLE (1918), 22,600 tons. Torpedoed by submarine in Mediterranean, Aug. 11, 1942.
 GLORIOUS (1916), 22,500 tons. Sunk by *Scharnhorst* and *Gneisenau* off Norway, June 8, 1940.
 HERMES (1919), 10,850 tons. Sunk by Japanese planes south of Ceylon, April 9, 1942.

AIRCRAFT CARRIERS—ESCORT

AUDACITY (ex-*Hannover*, 1938), 5,537 tons gross. Captured and converted German, torpedoed in North Atlantic, December, 1941.
 AVENGER (ex-*Rio Hudson*, 1940). Lost off Algeria, November, 1942.

CANADA - WAR LOSS

DESTROYERS

FRASER (ex-*Crescent*, 1931), 1,375 tons. Sunk by collisions with British *Calcutta* in the Gironde, June 28, 1940.
 MARGAREE (ex-*Diana*, 1932), 1,375 tons. Collided with merchant vessel in Atlantic, October, 1940.

OTTAWA (ex-*Crusader*, 1931), 1,375 tons. Torpedoed in Gulf of St. Lawrence, Sept. 21, 1942.

ST. CROIX (ex-U. S. four-stacker *McCook*, 1919), 1,190 tons. Reported Oct. 3, 1943, as lost in North Atlantic convoy action.

CORVETTES

(*Spikenard* and *Windflower*, British corvettes on loan to Canada, also lost.)
 CHARLOTTETOWN (1941). Torpedoed in Gulf of St. Lawrence, Sept. 18, 1942.
 LEVIS (1940). Lost, Sept. 27, 1941.
 LOUISBURG. Bombed in Mediterranean, Feb. 16, 1943.
 WEYBURN. Mined off Gibraltar, March 8, 1943.

OTHER VESSELS

BRAS D'OR (1901), 221 tons gross. Trawler. Missing in Gulf of St. Lawrence storm, October, 1940.
 CHEDABUCTO. Cowichan class minesweeper. 750 tons. Sunk in collision in Gulf of St. Lawrence, Feb. 7, 1944.
 OTTER (ex-*Conseco*). Armed yacht. Burned off Nova Scotia, March, 1941.
 RACCOON (ex-*Holonta*). Torpedoed in convoy action in Gulf of St. Lawrence, Sept. 14, 1942.

AUSTRALIA - WAR LOSS

CRUISERS

CANBERRA (1927), 10,000 tons. Lost in Battle of Savo Island, Aug. 9, 1942.
 PERTH (ex-*Amphion*, 1934), 6,980 tons. Missing off Java, March 1, 1942.
 SYDNEY (1934), 6,830 tons. Sunk in action with German merchant cruiser *Kormoran* (also sunk), Nov. 19, 1941.

DESTROYERS

NESTOR (1940), 1,690 tons. Sunk by bombs, June 15, 1942.
 VAMPIRE (1917), 1,090 tons. Lost in Bay of Bengal, April 17, 1942.
 WATERHEN (1918), 1,100 tons. Damaged by planes and foundered, Mediterranean, July, 1941.

SLOOPs

PARRAMATTA (1939), 1,060 tons. Torpedoed off Libya, November, 1941.
 YARRA (1935), 1,060 tons. Sunk by Japanese surface forces south of Java, March 13, 1942.

MINESWEEPERS

ARMIDALE (1940), 938 tons. Bombed off Timor, Dec. 23, 1942.
 WALLAROO, 938 tons. Collided with Allied merchantman off Australia, June 20, 1943.

TRAWLER

GOORANGAI (1919), 223 tons gross. Collided with passenger steamer at Port Phillip, November, 1940.

INDIA - WAR LOSS

INDUS (1934), 1,190 tons. Sloop. Sunk by Japanese aircraft, Akyab, April, 1942.

PATHAN (1918), 661 tons. Corvette. Torpedoed by Italian submarine, June 23, 1940.

NEW ZEALAND - WAR LOSS

MOA (1940). Corvette. Bombed by Japanese at Guadalcanal, April 7, 1943.

NEWFOUNDLAND - WAR LOSS

CARIBOU (1925), 2,222 tons gross. Transport. Torpedoed in Cabot Strait, Oct. 14, 1942.

SOUTH AFRICA - WAR LOSS

PARKTOWN. Auxiliary minesweeper. Disabled during evacuation of Tobruk and sunk by British forces, June 21, 1942.

SOUTHERN FLOE (1936), 344 tons gross. Minesweeping ex-whaler, lost February, 1941.

U. S. S. R. WAR LOSS

As in the case of army casualties, the Soviet government has made few statements relating to naval losses. The following list therefore is based largely on enemy claims, which cannot be taken at their face value. The Germans, for example, in 1941 claimed the total disablement of *Oktiabrskaya Revolutia* and the sinking of *Marat*. *Oktiabrskaya Revolutia*, however, is known to have been unharmed and *Marat* was only temporarily disabled. German claims, of course, are not included here if they can be specifically disputed; on the other hand, this is not often possible. It should be noted, however, that losses of the Soviet Black Sea Fleet have probably been large. This is indicated by the fleet's comparative inactivity during the Soviet advance through the Ukraine and also by the fact that its commander, Vice-Adm. F. A. Oktiabrsky, is the only Red Fleet chief not promoted to full admiral since the beginning of the war.

BATTLESHIP

KRASNAYA BESSARABIA, 35,000 tons. Destroyed on slip at Nikolaiev to prevent German capture, August, 1941.

CRUISER

CHERVONAYA UKRAINA (1915), 6,934 tons. Claimed by Germans to have been sunk off Sevastopol, February, 1942.

German claims to have sunk *Kirov*, *Kuibyshev* and *Maxim Gorki* are unsubstantiated, but one or more of these has probably been damaged.

DESTROYERS

ERIVAN, 2,900 tons. Destroyed on Nikolaiev slipway to prevent capture, August, 1941.

FRUNZE (1915), 1,300 tons. Sunk by planes in Black Sea, Sept. 24, 1941.

KARL MARX (1914), 1,354 tons. Reported found sunk by bombs at entrance to Tallinn on German capture of port, August, 1941.

KIEV, 2,900 tons. Destroyed on Nikolaiev slipway to prevent capture, August, 1941.

STRASHNI (1938), 1,800 tons. Mined off Oesel, Aug. 18, 1941.

Two, unnamed, destroyed on Nikolaiev slipway to prevent capture, August, 1941.

Germans have also claimed, without confirmation, the sinking or destruction of *Artem*, *Beshumni*, *Beztroshni*, *Bistri*, *Engels*, *Gnievni*, *Gordi*, *Grosiastchi*, *Grosvoi*, *Kronstadt*, *Lenin*, *Minsk*, *Moskva*, *Murmansk*, *Serditi*, *Smetlivi*, *Smyeli*, *Svobodni*, *Tucha* and *Volodarski*. They are among the following claims made in German communiques:

One destroyer mined in Baltic, June 24, 1941; two sunk by MTBs, Baltic, June 1941; one by Finnish shore batteries, July, 1941; two mined in Gulf of Finland, August, 1941; two sunk by air attack, Gulf of Finland, Aug. 31, 1941; three (possibly *Beshumni*, *Beztroshni*, *Bistri*) in Black Sea, Sept. 22, 1941; one in action with German destroyers off Murman coast, Dec. 30, 1941; one by planes off Murman coast, Feb. 30, 1942; one by planes off Sevastopol, June 28, 1942; three by planes in Black Sea, Oct. 7, 1943.

SUBMARINES

ex-*RONIS*, ex-*SPIDOLA* (1926), 390 tons. Sunk in Baltic, June, 1941.

Two under construction at Nikolaiev, destroyed to prevent capture, August, 1941.

Germans have additionally claimed the sinking of 46 Soviet submarines through March, 1944, among them *S-1* and *S-3*. These are included in following reports from German communiques:

Four stated to have been found scuttled at Liepaja (Libau) on German occupation of port, July, 1941; two sunk in Black Sea, July, 1941; one mined in Gulf of Finland, November, 1941; one mined in Gulf of Finland, May 27, 1943; one sunk in Gulf of Finland, May 30, 1943; six sunk in previous months in Gulf of Finland and reported Dec. 18, 1943; one in Black Sea, Jan. 21, 1944; and one in Black Sea, March 10, 1944.

TRAINING SHIP

KOMINTERN (1903), 6,338 tons. Ex-cruiser, reported sunk off Sevastopol, March 3, 1942.

OTHER VESSELS

A large number of sub chasers, patrol boats, MTBs, motor gun boats, river monitors, river gunboats, minelayers, minesweepers and other auxiliary types have doubtless been lost. A list of German claims of such losses is unwarranted, however, as identification even as to types is impossible.

FRANCE-WAR LOSS

BATTLESHIP

BRETAGNE (1913), 22,189 tons. Disabled by British gunfire at Mers-el-Kebir, July 3, 1940; subsequently capsized.

CRUISER MINELAYER

LA TOUR D'AUVERGNE (1929), 4,773 tons. Sunk by internal explosion, Casablanca, Sept. 13, 1939.

DESTROYERS

BISON (1938), 2,436 tons. Disabled by German bombs off Norway and sunk by Allied forces as beyond repair, May 3, 1940.

BOULONNAIS (1927), 1,378 tons. Sunk by U. S. forces, Casablanca, Nov. 8, 1942.

BOURRASQUE (1925), 1,319 tons. Mined off Dunkerque, May 30, 1940.

CHACAL (1924), 2,126 tons. Sunk by German planes, off Dunkerque, May 24, 1940.

CYCLONE (1925), 1,319 tons. Scuttled at Brest, June 18, 1940, while under repair.

FOUDROYANT (1929), 1,378 tons. Sunk by German planes, off Dunkerque, June 1, 1940.

FRONDEUR (1929), 1,378 tons. Sunk by U. S. forces, Casablanca, Nov. 8, 1942.

JAGUAR (1923), 2,126 tons. Sunk by German planes, off Dunkerque, May 23, 1940.

L'ADROIT (1927), 1,378 tons. Sunk by German planes, off Dunkerque, May 21, 1940.

LA RAILLEUSE (1926), 1,378 tons. Destroyed by internal explosion, Casablanca, March 24, 1940.

LE CHEVALIER PAUL (1932), 2,441 tons. Torpedoed by British planes off Syria, June 10, 1941.

MAILLE BREZE (1931), 2,441 tons. Blew up at Greenock, April 30, 1940.

MILAN (1931), 2,441 tons. Sunk by U. S. forces, Casablanca, Nov. 8, 1942.

ORAGE (1924), 1,319 tons. Sunk by German planes, off Dunkerque, May 23, 1940.

SIROCO (1925), 1,319 tons. Torpedoed by German MTBs, off Dunkerque, May 31, 1940.

TORPEDO BOAT

(A) BRANLEBAS (1937), 610 tons. Foundered, Dec. 10, 1940.

ANTI-SUBMARINE VESSELS

(A) CH-6, 7 (1939), 107 tons. Lost, Oct. 1940.

CH-9 (1939), 107 tons. Sunk by German planes off Dunkerque, May 21, 1940.

CH-16 (1939), 107 tons. Scuttled off Lorient, June 18, 1940.

CH-44 (1940), 126 tons. Scuttled at Le Havre, June, 1940.

CH-45, 46 (1940), 126 tons. Scuttled at Fécamp, June, 1940.

CH-107 (1920), 128 tons. Reported lost.

BOUGAINVILLE (1913), 7,110 tons gross. Armed merchant cruiser, torpedoed by British planes, Diego Suarez, May 5, 1942

(A) CONQUERANTE (1917), 374 tons. Patrol vessel, reported lost.
 ENSEIGNE HENRY (1918), 453 tons. Sloop, scuttled at Lorient, June 19, 1940.
 ETOURDI (1910), 310 tons. Patrol vessel, scuttled at Brest, June 18, 1940.
 LA BASTIAISE (1940). British-built corvette, mined during trials June 22, 1940.
 LURONNE (1917), 265 tons. Patrol vessel. Mined off Lorient.
 (A) REINE. Sub chaser, lost Aug. 12, 1942.
 RIGAULT DE GENOUILLY (1932), 1,969 tons. Sloop, torpedoed off Algiers by British submarine, July 4, 1940.
 (A) SUIPPE (1918), 604 tons. Patrol vessel. Reported lost.
 VAUQUOIS (1917), 644 tons. Patrol vessel, mined off Brest, June 19, 1940.
 Unnamed Free French sub chaser was lost Dec. 21, 1943.
 Two British corvettes manned by the Free French, *Alysse* and *Mimosa*, have also been lost.

SUBMARINES

ACTEON (1929), 1,379 tons. Sunk resisting Algerian landing of Allies, Nov. 8, 1942.
 ACHILLE (1930), AGOSTA (1934), 1,379 tons. Scuttled at Brest, June 18, 1940.
 AJAX (1930), 1,379 tons. Sunk at Dakar by British, Sept. 24, 1940.
 AMPHITRITE (1930), 571 tons. Sunk by U. S. forces, Casablanca, Nov. 8, 1942.
 ARGONAUTE (1929), 565 tons. Sunk by Allied forces, Algeria, Nov. 8, 1942.
 BEVEZIERS (1935), 1,379 tons. Sunk by British planes, Diego Suarez, May 5, 1942.
 DORIS (1927), 552 tons. Torpedoed by German submarine off Holland, May 8, 1940.
 LA PRAYA (1940), 1,500 tons. Scuttled at Cherbourg, June 19, 1940.
 LA PSYCHE (1932), 571 tons. Sunk by U. S. forces, Casablanca, Nov. 8, 1942.
 LA SYBILLE (1933), 571 tons. Sunk by Allied forces, Algeria, Nov. 8, 1942.
 LE CONQUERANT (1934), 1,379 tons. Sunk by Allied forces, Algeria, Nov. 8, 1942.
 LE HEROS (1932), MONGE (1929), 1,379 tons. Sunk by British forces, Diego Suarez, May 5, 1942.
 MORSE (1925), 974 tons. Mined off Sfax, June 15, 1940.
 (A) NARVAL (1925), 974 tons. Torpedoed by Italian torpedo boat, Dec. 14, 1940.
 OREADE (1932), 571 tons. Sunk by U. S. forces, Casablanca, Nov. 8, 1942.
 OUESSANT (1936), PASTEUR (1928), 1,379 tons. Scuttled at Brest, June 18, 1940.
 PERSEE (1931), 1,379 tons. Sunk by British, Dakar, Sept. 23, 1940.
 PONCELET (1929), 1,379 tons. Sunk by British destroyers off Gabon, September, 1940.
 ROLAND MORILLOT (1940), 1,500 tons. Scuttled at Cherbourg, June 19, 1940.
 SFAX (1934), 1,379 tons. Torpedoed by Axis submarine by mistake, off West Africa, Dec. 19, 1940.
 SIDI-FERRUCH (1937), 1,379 tons. Sunk by Allied forces off Algeria, Nov. 8, 1942.



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SOUFFLEUR (1924), 974 tons. Sunk by British forces off Beirut, June 25, 1941.

(A) SURCOUF (1929), 2,880 tons. World's largest submarine, reported missing April 18, 1942.

One Free French submarine admitted missing Jan. 24, 1944.

OTHER VESSELS

BARSAC (1929), 1,049 tons gross. Auxiliary patrol vessel, wrecked near Vigo, Jan. 6, 1940.

DORDOGNE (1914), 7,333 tons. Oiler, scuttled at Brest, June 18, 1940.

EDMOND RENEE. Torpedoed by British planes and beached, Diego Suarez, May 5, 1942.

LA CANCALAISE. Trawler. Mined, Dover Strait, May 1, 1940.

LA CHERBOURGEOISE. Trawler. Scuttled in Gironde, June 23, 1940.

LA LORIENTAISE. Trawler. Demolished on slip, Dunkerque, May 21, 1940.

LA QUIMPEROISE. Trawler. Scuttled at Lorient, June, 1940.

LE LOING (1927), 9,900 tons. Oiler. Scuttled off La Pallice, June 22, 1940.

LE NIGER (1930), 5,482 tons. Oiler. Lost off Dunkerque, May, 1940.

(A) MARIE MAD. Minesweeper. Lost Nov. 4, 1943.

(A) POULMIC (1937), 350 tons. Transport. Mined in North Sea, October, 1940.

RHONE (1910), 2,785 tons. Oiler. Torpedoed by mistake by Axis submarine off West Africa, Dec. 19, 1940.

(A) VIKINGS (1935), 1,150 tons gross. Auxiliary patrol vessel, lost April 30, 1942.

VTB 13, 14. MTBs, destroyed on stocks, St. Nazaire, June, 1940.

ITALY-WAR LOSS

BATTLESHIP

ROMA (1940), 35,000 tons. Sunk by German rocket bomb attack en route to Malta to surrender to Allies, Sept. 8-9, 1943.

CRUISERS

ALBERICO DA BARBIANO, ALBERTO DI GIUSSANO (both 1930), 5,050 tons. Torpedoed by Allied destroyers, Cape Bon, Dec. 13, 1941.

ARMANDO DIAZ (1932), 5,000 tons. Torpedoed by British submarine in Mediterranean, March 8, 1941.

BARTOLOMEO COLLEONI (1930), 5,050 tons. Sunk by Australian cruiser *Sydney* off Crete, July 19, 1940.

FIUME (1930), POLA (1931), both 10,000 tons. Sunk in Battle of Cape Matapan, March 28, 1941.

TRENTO (1927), 10,000 tons. Torpedoed by British naval planes and sunk by British submarine *Umbra*, Central Mediterranean, June 15, 1942.

TRIESTE (1926), 10,000 tons. Sunk by U. S. bombers, La Maddalena, April 10, 1943.

ZARA (1930), 10,000 tons. Lost in Battle of Cape Matapan, March 28, 1941.

One of Condottieri type (possibly *Muzio Attendolo*) capsized in Naples harbor as result of heavy Allied air attack, Dec. 4, 1942.

DESTROYERS AND TORPEDO BOATS

AIRONE (1936), 679 tons. Tentatively identified as torpedo boat sunk by British surface forces off Crete, May, 1941.

ALCIONE (1937), 679 tons. Reported lost; possibly second vessel sunk by British *Ajox*, Oct. 11, 1940.

ALTAIR (1936), 642 tons. Torpedoed by British submarine, November, 1941.

ALVISE DA MOSTO (1929), 1,628 tons. Sunk by British surface forces, Central Mediterranean, Dec. 1, 1941.

AQUILONE (1927), 1,092 tons. Sunk by British Fleet Air Arm, Benghazi, Sept. 16, 1940.

ARIEL (1938), 679 tons. Sunk by British *Ajax*, Oct. 11, 1940.

ARTIGLIERE (1937), 1,620 tons. Sunk by British *Ajax*, York, Central Mediterranean, Oct. 11, 1940.

BALENO (1931), 1,220 tons. Sunk by British surface forces, Mediterranean, April 15, 1941.

CESARE BATTISTI (1926), 1,058 tons. Sunk in Red Sea, March, 1941.

CONFENZA (1920), 862 tons. Lost, probably in 1941.

CURTATONE (1922), 966 tons. Possibly lost.

DANIELE MANIN (1925), 1,058 tons. Sunk by British Fleet Air Arm, Red Sea, April 2, 1941.

ESPERO (1927), 1,073 tons. Sunk by British surface forces, Mediterranean, June 27, 1940.

EURO (1927), 1,073 tons. Possibly sunk.

FRANCESCO NULLO (1925), 1,058 tons. Torpedoed by British *Kimberley*, Red Sea, Oct. 21, 1940.

FULMINE (1931), 1,220 tons. Sunk by British light forces, Central Mediterranean, Nov. 8, 1941.

GIOSUE CARDUCCI (1936), 1,729 tons. Lost in Battle of Cape Matapan, March 28, 1941.

GIOVANNI ACERBI (1916), 669 tons. Sunk by British Fleet Air Arm, Red Sea, April, 1941.

GIOVANNI DA VERAZZANO (1928), 1,628 tons. Tentatively identified as vessel sunk by British cruiser, Crete, May 21, 1941.

LEONE (1923), 1,526 tons. Sunk by British Fleet Air Arm, Red Sea, April 1, 1941.

LEONE PANCALDO (1929), 1,628 tons. Reported sunk; particulars wanting.

LIBECCIO (1934), 1,449 tons. Sunk by British light forces, Central Mediterranean, Nov. 8, 1941.

LUCA TARIGO (1928), 1,628 tons. Sunk by British surface forces, Mediterranean, April 15, 1941.

MAESTRALE (1934), 1,449 tons. Lost in Battle of Cape Matapan, March 28, 1941.

NAZARIO SAURO (1925), 1,058 tons. Sunk by British Fleet Air Arm, Red Sea, April 2, 1941.

NEMBO (1927), 1,092 tons. Sunk by British Fleet Air Arm, Tobruk, July 4, 1940.

NICOLA FABRIZI (1917), 635 tons. Sunk by British submarine, October, 1941.

OSTRO (1928), 1,092 tons. Bombed by British Fleet Air Arm, Cyrenaica, Aug. 22, 1940.

PALESTRO (1919), 862 tons. Torpedoed by British submarine, Adriatic, Sept. 22, 1940.

PANTERA (1923), 1,526 tons. Scuttled at Massawa, April, 1941.

SAGITTARIO (1936), 642 tons. Tentatively identified as vessel sunk by British destroyers, Cape Mustapha, May 4, 1943.

TIGRE (1923), 1,526 tons. Scuttled at Massawa, April, 1941.

VEGA (1936), 642 tons. Sunk by British surface forces, Pantelleria, Jan. 10, 1941.

VINCENZO GIOBERTI (1936), 1,729 tons. Lost in Battle of Cape Matapan, March 28, 1941.

VINCENZO ORSINI (1916), 669 tons. Scuttled off Eritrea, April, 1941.

VITTORIO ALFIERI (1936), 1,729 tons. Possibly lost in Battle of Cape Matapan, March 28, 1941.

ZEFFIRO (1927), 1,073 tons. Sunk by British surface forces, July 9, 1940.

In addition to the foregoing, the following sinkings of unidentified Italian destroyers and torpedo boats have been reported:

One by RAF, Central Mediterranean, May 2, 1941; one by British submarine off Libya, May, 1941; one by British Fleet Air Arm, Aug. 15, 1941; one by British Fleet Air Arm off Tripoli, Sept. 3, 1941 (admitted); one (possibly *Leone Pancaldo* or another of Navigatori type) by British submarine, reported June 9, 1942; one mined (admitted June 11, 1942); three sunk by British cruisers and destroyers, Central Mediterranean, Dec. 2, 1942; one by British submarines, Mediterranean, reported Nov. 21, 1942; one (admitted Feb. 1, 1943) off Tunisian coast, possibly by British Fleet Air Arm planes Jan. 30-31; one destroyer, by Allied planes, Sicilian Straits, April 6, 1943; two by British destroyers, Sicilian Straits, April 15-16, 1943; one of *Aviere* type by RAF, La Spezia, April 19, 1943; two by Allied bombers, Tunisia, May 1, 1943; three by Allied planes, Tunisia, May 6, 1943; one by British submarine, north of Sicily, reported May 18, 1943; one torpedo boat and possibly one destroyer, by Allied destroyers, Cape Spartimento, June 1-2, 1943.

Above include *Curtatone*. Three losses admitted May, 1941, are probably *Palestro*, *Confienza*, *Euro*. Three losses admitted April 13, 1943, cannot be identified.

ANTI-SUBMARINE VESSELS

One patrol vessel by British submarine, reported July 1, 1942 (admitted); one corvette, off Tunisia, reported Feb. 1, 1943 (admitted); one anti-submarine vessel by British submarines, Tunisia, reported Feb. 4, 1943; one torpedoed by British submarines, Augusta harbor, Sicily, reported June 6, 1943; one armed yacht, Ligurian Sea, reported Aug. 17, 1943.

SUBMARINES

AMMIRAGLIO CARACCILOLO (1940), 1,461 tons. Sunk by British destroyer, Central Mediterranean, Dec. 13, 1941.

AMMIRAGLIO ENRICO MILLO (1940), 1,461 tons. Reported lost.

ARGONAUTA (1931), 590 tons. Reported lost.

ASTERIA (1941). Sunk by British destroyer, Mediterranean, April 1, 1943).

BERILLO (1936), 620 tons. Reported lost.

CAPITANO RAFFAELE TARANTINI (1940), 1,031 tons.

COBALTO (1941). Sunk by British destroyers, Central Mediterranean, Aug. 12, 1942.

CONSOLE GENERALE LIUZZI (1939), 1,031 tons. Reported lost.

DIAMANTE (1933), 590 tons. Reported lost.

DURBO (1938), 615 tons. Reported lost.

EMO (1938), 941 tons. Sunk by British trawler, North Africa, Jan. 4, 1942.

EVANGELISTA TORRICELLI (1934), 880 tons.

FOCA (1937), 1,109 tons. Possibly sunk.

GALILEO FERRARIS (1934), 880 tons. Sunk by British destroyer gunfire, Atlantic, Oct. 25, 1941.

GALILEO GALILEI (1934), 880 tons. Captured in Red Sea, June 19, 1940.

GALVANI (1938), 896 tons. Reported lost.

GEMMA (1936), 620 tons. Reported lost.

GLAUCO (1935), 863 tons. Sunk by French *La Curieuse*, W. Mediterranean, June 16, 1940.

GONDAR (1935), 615 tons. Sunk by Australian destroyer, Mediterranean, Sept. 30, 1940.

IRIDE (1936), LAFOLE (1938), MACALLE (1936), all 615 tons.

MARCELLO (1937), 941 tons. Believed lost.

MICHELE BIANCHI (1939), 1,039 tons. Loss admitted April 20, 1942.

NAIADE (1933), 590 tons. Sunk by British surface forces, off Libya, Dec. 14, 1940.

NANI (1938), 941 tons. Believed lost.

NEGHELLI (1937), 615 tons. Believed lost.

PIER CAPPONI (1927), 710 tons. Believed lost in 1940.

PIETRO CALVI (1935), 1,332 tons. Rammed by British *Lulworth*, reported Sept. 27, 1942.

RUBINO (1933), 590 tons. Believed lost in 1940.

UESI SCEBELI (1937), 613 tons. Believed lost in 1940.

In addition to foregoing, following unidentified losses were reported in 1943:

One admitted Jan. 5; one admitted Jan. 10; one of Fisalia type sunk by British destroyers, Central Mediterranean, Jan. 19 (possibly referred to in subsequent Italian admissions); one admitted Feb. 6; one sunk by Netherlands submarine *Dolfijn*, Mediterranean, reported Feb. 17 (possibly referred to in subsequent Italian admissions); one admitted March 12; two admitted April 13; one admitted June 26.

COAST DEFENSE VESSEL

SAN GIORGIO (1907), 9,232 tons. Reduced to hulk by RAF, Fleet Air Arm planes, Tobruk, June-December, 1940.

ARMED MERCHANT CRUISERS

RAMB I (1937), 3,700 tons gross. Sunk by British *Leander*, Indian Ocean, March, 1941.

One sunk by RAF, Gulf of Sirte, Aug. 23, 1941; one admitted sunk by British submarine, Central Mediterranean, Aug. 23, 1941.

MOTOR TORPEDO BOATS

One sunk by French, Riviera, June 13, 1940; two by British cruisers, Scarpanto, Sept. 4, 1940; one by British convoy escorts, Mediterranean, July 24, 1941; twelve in attack on Valetta, Malta, July 26, 1941; one by Allied destroyers, Central Mediterranean, Dec. 13, 1941; one or two in attack on Valetta, May 16-17, 1942; two in convoy action off Pantelleria, Aug. 12, 1942; one by British destroyers off Egypt, Aug. 29, 1942; one admitted April 18, 1943; one by RAF, May 1, 1943.

MINELAYERS

COTRONE or VIESTI (1918), 359 tons. Torpedoed by British submarine, September, 1941.

One of Fasana type, torpedoed by British submarine off Corsica, reported Aug. 17, 1943.

MINESWEEPERS AND TRAWLERS

GIOVANNI BERTA (1924), 620 tons. Sunk by British Fleet Air Arm, Tobruk, June 13, 1940.

GIUSEPPE BIGLIERI (1924), 620 tons. Sunk by gunfire of British submarine, June, 1941.

PORTO CORSINI (1912), 280 tons. Scuttled at Massawa, April, 1941.

VALOROSO (1908), 338 tons. Scuttled at Massawa, April, 1941.

One sunk by British submarine gunfire, Mediterranean, reported Feb. 15, 1942; one torpedoed by British submarine, reported April, 1942; one sunk by British forces, Mediterranean, Jan. 15, 1943; one by British submarine gunfire, reported March 4, 1943; two by Allied light forces, off Cape Bon, May 2, 1943; one possibly sunk near Malta, June 1, 1943; one motor minesweeper and one trawler by Allies, Ligurian Sea, reported Aug. 17, 1943.

OTHER VESSELS

ANTONIO PACINOTTI (1922), 2,727 tons. Submarine tender, sunk by British planes, Bomba, Libya, Aug. 22, 1940.

BRENNERO (1921), 9,790 tons. Oiler, interned in U. S. port, 1940; subsequently seized by U. S. government.

BRONTE (1904), 8,238 tons. Oiler, captured at Bandar Shapur, Aug. 27, 1941.

GIOVE (1916), 9,540 tons. Oiler, captured at Massawa, April 8, 1941.

STIGE (1924), 1,343 tons. Gasoline tanker, sunk by British submarine, Central Mediterranean, reported Nov. 28, 1942.

One of unidentified type sunk by British submarine, Central Mediterranean, reported March 19, 1943.

GERMANY-WAR LOSS

BATTLESHIPS

BISMARCK (1939), 35,000 tons. Torpedoed by *Devonshire* after being reduced to hulk by *King George V* and *Rodney*, North Atlantic, May 27, 1941.

SCHARNHORST (1936), 26,000 tons. Torpedoed by British cruisers after being reduced to hulk by guns of *Duke of York* and torpedoes of British and Norwegian destroyers, off North Cape, Dec. 26, 1943.

ARMORED SHIP

ADMIRAL GRAF SPEE (1934), 10,000 tons. Scuttled off Montevideo Dec. 17, 1939, four days after action with British cruisers *Ajax*, *Achilles* and *Exeter*.

CRUISERS

BLÜCHER (1937), 10,000 tons. Sunk by mines and shore batteries in Oslofjord, April 9, 1940.

KARLSRUHE (1927), 6,000 tons. Torpedoed by British submarine *Truant* off Kristiansand, April 9, 1940.

KÖLN (1927), 6,000 tons. Sunk in Gulf of Finland by Soviet warships and coastal batteries, Sept. 28, 1941.

KÖNIGSBERG (1927), 6,000 tons. Sunk by British dive bombers at Bergen, April 9, 1940.

One, unnamed, claimed sunk by Russian submarine in Baltic, November, 1941.

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DESTROYERS

ANTON SCHMITT (1937), 1,811 tons. Sunk by British destroyers at Narvik, April 10, 1940.

BERND VON ARNIM (1936), 1,625 tons. Sunk by *Warspite* and British destroyers, Narvik, April 13, 1940.

BRUNO HEINEMANN (1936), 1,625 tons. Sunk off Narvik, late April, 1940.

DIETHER VON ROEDER (1937), 1,811 tons. Sunk by *Warspite* and British destroyers, Narvik, April 13, 1940.

ERICH GIESE, ERICH KOELLNER, GEORG THIELE (1936-7), 1,625 tons. Sunk by *Warspite* and British destroyers, Narvik, April 13, 1940.

HANS LÜDEMANN, HERMANN KÜNNE (1937), 1,811 tons. Sunk by *Warspite* and British destroyers, Narvik, April 13, 1940.

LEBERECHT MAASS (1935), 1,625 tons. Sunk by Polish batteries at Hel, Sept. 3, 1939.

MAX SCHULTZ (1935), 1,625 tons. Torpedoed by British planes, Trondheim, April 11, 1940.

WILHELM HEIDKAMP (1937), 1,811 tons. Sunk by British destroyers at Narvik, April 10, 1940.

WOLFGANG ZENKER (1936), 1,625 tons. Sunk by *Warspite* and British destroyers, Narvik, April 13, 1940.

One torpedoed by British plane off Brittany, April 6, 1941; two sunk by Soviet naval forces, Gulf of Riga, July 7, 1941; two or three of 1,811-ton type, by Soviet forces, off Windau, July 12, 1941; one torpedoed in Baltic, July 22, 1941; ten more sunk by Soviet Navy, 1941; one or two (one admitted by Germans) sunk by British cruiser *Trinidad* off Norway, March 30, 1942; one sunk by British forces off Norway, May 2, 1942; one sunk by Soviet planes, Barents Sea, May 18, 1942; one torpedoed by Soviet submarine, Baltic, Sept. 18, 1942; one sunk by British forces, Bear Island, Dec. 31, 1942; three sunk by British *Enterprise* and *Glasgow*, Dec. 29, 1943.

TORPEDO BOATS

ALBATROS (1926), 800 tons. Sunk by Norwegian *Olav Trygvason*, Oslofjord, April 9, 1940.

GREIF, LEOPARD, LUCHS, SEEADLER (1926-7), 800 tons. Sunk by Soviet navy and coastal batteries, Gulfs of Riga and Finland, July 8 and Sept. 28, 1941.

One torpedoed off France by *H.M.S. Swordfish*, October, 1940; one sunk by British planes, Oct. 26, 1940; two sunk by Soviet naval planes, July 26, 1941; one sunk in Baltic (reported July 28, 1941); four sunk by Soviet navy, Baltic, Aug. 11, 1941; one sunk off Oesel by Soviet forces, Sept. 13, 1941; two sunk, Gulf of Finland, Sept. 14, 1941; one sunk by British off Murman coast, September, 1941; four additional claimed sunk by Soviet navy, 1941; one sunk by Soviet ships and planes, Barents Sea, May 15, 1942; one of 600-ton type torpedoed by British MTB, off Belgium, June 7, 1942; two of 600-ton type, by British surface ships off Holland, May 13, 1943; one by Soviet forces, June, 1943; one probably sunk by British and Norwegian forces off Ushant, July 11, 1943.

SUBMARINES

U-12 (1935), 250 tons.

U-13 (1935), 250 tons. Sunk in 1940.

U-14-16, 18, 19 (1935-36), 250 tons.

U-25 (1936), 712 tons.

U-26 (1936), 712 tons. Sunk by *H.M.S. Gladiolus*, June 30, 1940.

U-27, 28, 31-33, 35, 36 (1936-37), 500 tons.

U-38 (1938), 740 tons. Described as sunk Sept. 17, 1942, in report from Argentina.

U-39 (1938), 749 tons. Sunk by British destroyers, Sept. 14, 1939.

U-40-44 (1938), 740 tons.

U-64 (1939), 740 tons.

U-73 (1939), 517 tons. Captured in Barents Sea by Soviet forces (reported Sept. 7, 1941).

U-85 (1939), 517 tons.

U-95 (1940), 517 tons. Torpedoed by Dutch submarine, W. Mediterranean, Nov. 28, 1941.

U-99 (1940), 517 tons. Destroyed by British ships, March, 1941.

U-100 (1940), 517 tons. Rammed by British destroyer in Atlantic, March, 1941.

U-103-110 (1940), 740 tons.

U-111 (1940), 740 tons. Sunk by British trawler *Lady Shirley*, Oct. 4, 1941.

U-131 (1940), 740 tons. Sunk in Atlantic, Dec. 17, 1941.

U-432 (1940), 517 tons. Sunk by Free French *Aconit*, Atlantic, March, 1943.

U-433 (1940), 517 tons. Sunk by British corvette *Marigold*, near Gibraltar, Nov. 16, 1941.

U-434 (1940), 517 tons. Sunk in Atlantic, Dec. 18, 1941.

U-444 (1940), 517 tons. Sunk by British *Harvester* and Free French *Aconit*, Atlantic, March, 1943.

U-501 (1941), 740 tons. Sunk by Canadian *Chambly* and *Moosejaw*, Sept. 11, 1941.

U-556 (1941), 740 tons. Sunk by British *Gladiolus* and Canadian *Levis*, June 27, 1941.

U-570 (1941), 740 tons. Disabled by British plane and captured, Atlantic, Sept. 8, 1941.

U-574 (1941), 517 tons. Sunk in Atlantic, Dec. 19, 1941.

A great many submarines have been sunk in addition to the foregoing. Sinkings reported since Jan. 1, 1943, are as follows:

One in Mediterranean by Canadian *Ville de Quebec*, Jan. 25, 1943; one probably sunk by Greek *Adrias*, Atlantic, March 13; one by U.S.C.G.C. *Campbell*, Atlantic, early 1943; one by Soviet Black Sea Fleet, April 25; four certainly and six additional probably sunk by British forces in eight-day Atlantic battle, announced April 30; five sunk by RAF Coastal Command planes and British surface forces in previous ten days, announced May 30; one in Black Sea, June 4; one by planes in Black Sea, June 17; two certainly plus three probably sunk in five-day Atlantic convoy battle by British surface craft, announced June 20; one by planes in Black Sea, June 28; one certainly plus one probably sunk by British forces in Atlantic, announced June 30; one by Soviet planes in Black Sea, July 11; one by Soviet planes, Black Sea, July 19; two by British sloops, Atlantic, announced July 29; two in convoy action by British air and surface forces, reported Aug. 3; seven by combined Allied air and naval action, Bay of Biscay, disclosed Sept. 6; one by British *Inconstant* off Algiers, announced Oct. 6; six or more sunk by British and American forces in Atlantic, reported Dec. 5; five by Anglo-American air and surface forces, reported Dec. 11; two by British surface forces, Dec. 17; two by British sloops, announced Jan. 8, 1944; two by British sloops, reported Jan. 22; one by Soviet forces, Barents Sea, Jan. 23; three by Allied naval forces, Atlantic, announced Feb. 20.

SLOOP

BREMSE (1931), 1,460 tons. Sunk by British surface forces on Murman coast, September, 1941.

ARMED MERCHANT CRUISERS

ATLANTIS. Sunk by British *Devonshire*, South Atlantic, Nov. 22, 1941.

KORMORAN (ex-*Steiermark*, 193B), 9,400 tons gross. Sunk by British *Sydney* (herself sunk in action), Indian Ocean, November, 1941.

PINGUIN. Sunk by British *Cornwall*, Indian Ocean, May, 1941. One sunk by RAF, Stettin, Jan. 6, 1944, reported by Swedish eye-witnesses.

PATROL AND OTHER SMALL CRAFT

Partly because of differences in terminology in the different Allied communiques and partly because identification even as to type is often uncertain, an accurate summary by type of German small craft losses is impossible. Hence, patrol vessels, MTBs (E-boats), minesweepers, motor minesweepers (R-boats), trawlers, etc. are grouped together in this listing. Except in the case of specifically identified vessels, the vessels are described in the language of the communique reporting their loss.

FÖHN. Trawler, off Norway, British light forces, Dec. 27, 1941.

HAVEL. Minesweeper. No date reported.

KÖNIGIN LUISE (1935), 600 tons. Patrol vessel, torpedoed off German coast by British planes, July 24, 1940.

MÜNCHEN (1926), 306 tons gross. Trawler, scuttled to avoid capture, May 9, 1941.

M-5, 61, B5, B9. Minesweepers. No dates reported.

M-132 (1919), 525 tons. Minesweeper, wrecked on Jutland shore, January, 1940.

R-17 (1935), 90 tons. Motor minesweeper, mined at entrance to Baltic, Dec. 8, 1939.

VON DER GRÖBEN. Minesweeper. No date reported.

Unidentified losses:

1939: three trawlers mined in approaches to Baltic, Oct. 21, Nov. 25, Dec. 4; one foundered in storm, Baltic, Dec. 30.

1940: one trawler sunk by RAF, North Sea, March 27; one trawler torpedoed by Polish *Orzel*, Skaggerak, April 10; one trawler sunk by French destroyers, Skaggerak, April 25; three E-boats sunk by British, French destroyers off Norway, April; three E-boats, by British planes, May-June; one E-boat, in Channel, Aug. 6; one E-boat, one trawler, by British *Malcolm*, *Verity*, Aug. 14; one patrol vessel, by British planes, off Norway, Aug. 2B; one minesweeper of 525-ton type, mined, Sept. 10; two E-boats, one trawler, by British warships off France, October; one E-boat, by British light forces, North Sea, Nov. 19.

1941: one trawler, sunk in Lofoten Island raid, March 4; one trawler, British naval forces, Atlantic, early June; one trawler, off Iceland, end June; one patrol vessel, by Soviet Baltic planes, July 3; one patrol vessel, five minesweepers, by Soviet naval forces, off Windau, July 12; one minesweeper, by RAF, off Ushant, July 12; one patrol vessel, by British light forces, Dover Strait, July 23-24; two patrol vessels, Baltic, July 2B; one patrol vessel, by Soviet dive bombers, Baltic, July 31; one patrol vessel, by Soviet Baltic planes, Aug. 1; one patrol vessel, by RAF, off Holland, Aug. 2; two minesweepers, by Soviet Baltic naval forces, reported Aug. 22; one patrol vessel, by RAF, off Frisian Islands, Aug. 26; one E-boat, one trawler, by British light forces, Channel, Sept. 8; one patrol vessel, by RAF, off Holland, Sept. 16; two minesweepers certainly, two more probably, by RAF off Belgium, Sept. 17; one trawler, by British light forces, off Murmansk, September; three E-boats, by British MTBs, North Sea, Nov. 19-20; one E-boat, by RAF, Nov. 20; one patrol vessel, by British MTBs, Nov. 26 (admitted by Germans); one trawler, by British light forces, Norway, Dec.

27; one trawler, by British light forces, Lofoten Islands, end December.

1942: one patrol vessel, by RAF, off Holland, Feb. 12 (admitted by Germans); one E-boat, torpedoed by British light forces, Channel, March 13; five E-boats, two R-boats, by British light forces in Channel, North Sea, March 14-15; one patrol vessel, one minesweeper, by Soviet naval forces, Barents Sea, March 17; one trawler, by British MGB, North Sea, March 27; one minesweeper, by Soviet navy, Barents Sea, April 13; two patrol vessels, by Soviet navy, Barents Sea, May 14; two trawlers probably sunk by British light forces off France, May 14; one trawler, by Soviet navy, Gulf of Finland, May 31; one trawler, by RAF, near Flushing, May 31; one patrol vessel, by British light forces during Le Toquet raid, June 4; one R-boat, by British planes, off Holland, June 9; one minesweeper probably sunk by RAF off Walcheren, June 15; one patrol vessel, by Soviet submarine, off Norway, June 27; one E-boat, by RAF, off Normandy, June 29; two minesweepers, by British MGBs, July 9; two trawlers, by British small craft, off France, July 26, 2B; one trawler, by British small craft, off Holland, July 31; two R-boats, by British light forces, Dover Strait, Aug. 16-17; two trawlers, by British forces, during Dieppe landing operations, Aug. 19; one trawler, by RAF, off France, Sept. 9; two minesweepers, by Soviet planes, Black Sea, Sept. 1B; one E-boat, by British light forces, North Sea, Oct. 14 (admitted).

1943: one trawler, by British small craft, off Holland, Jan. 19; one E-boat, by British destroyers, North Sea, reported Feb. 19; two E-boats, by RAF, off Holland, March 5; one E-boat, by British light craft, East Coast, March 8; one R-boat, by British Fleet Air Arm, off Boulogne, March 25-26; one patrol vessel, by British light forces, off Holland, March 2B; one E-boat certainly, two probably, by British MGBs, East Coast, March 29; one E-boat, by Soviet planes, April 2; one trawler, by British trawlers, off Dunkerque, reported April 4; four E-boats, one motor boat, by Soviet guerrilla raid on Dnieper harbor, reported April 12; two E-boats, by British *Westminster* and *Widgeon*, East Coast, reported April 15; one trawler, torpedoed by British light forces, off Holland, announced April 1B; one patrol vessel, by Soviet planes, April 20; one trawler, by Soviet planes, Barents Sea, April 26; one E-boat, by British destroyers, off Brittany, reported April 2B; one trawler, by British light craft, off Holland, April 29; one patrol vessel certainly plus two probably, by British light craft, off Holland, reported April 30; one trawler, by Soviet navy, Barents Sea, May 6; eight motor craft, Sea of Azov, announced May 9; two trawlers, by Soviet navy, Barents Sea, May 14; one minesweeper, by Soviet planes, May 15; two cutters, Gulf of Finland, by Soviet navy, May 25; one trawler, by British light forces, off Holland, May 27; six R-boats, by Fleet Air Arm, RAF, off France, announced May 29; two trawlers, by British light forces, off Dunkerque, May 30; two patrol vessels, one minesweeper, by Soviet navy, Barents Sea, announced June 4; one cutter, by Soviet planes, Barents Sea, June 17; five escort vessels, by RAF, off Holland, June 21; four MTBs, by Soviet batteries, Yeisk, June 22; one patrol vessel, one cutter, by Soviet planes, Gulf of Finland, June 26, 30; one R-boat, by British, Norwegian light forces, off Ushant, July 11; two E-boats, by Allied forces, Messina Strait, July 12-13; one E-boat, by Allied destroyer, off Augusta, reported July 16; one patrol vessel, by Soviet planes, Barents Sea, July 19; two E-boats, by Allied MTBs, Messina Strait, July 19; one E-boat, by British light craft, off France, reported July 25; two patrol vessels, by Soviet navy, Barents Sea, reported July 30; one probable E-boat, by U. S. PTs, off Italy, July 30; two patrol vessels, by Soviet navy, Gulf of Finland, Aug. 2; one patrol vessel, by Soviet planes, Black Sea, Aug. 2; one patrol vessel, two trawlers, by Soviet MTBs, Aug. 3; three E-boats, by RAF, Fleet Air Arm, off Calais, Aug. 5; one patrol vessel, by Soviet planes, Black Sea, Aug. 7; two patrol vessels, by Soviet planes, Gulf of Finland, Aug. 9; four E-boats, by RAF, off France, Aug. 11; one minesweeper, one R-boat, by RAF, Channel, Aug. 20; three trawlers, by Soviet navy, Barents Sea, reported Aug. 20; two patrol vessels, one gunboat, one cutter, by Soviet planes, Gulf of Finland, Aug. 26-27;

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two patrol vessels, four MTBs, one trawler, by Soviet planes, MTBs, Black Sea, Aug. 29, Sept. 1, 2; one minesweeper, one E-boat, by RAF, Channel, Sept. 6; five trawlers, by Soviet Baltic Fleet ships, aircraft, Sept. 6-7; two MTBs, by Soviet aircraft, Black Sea, Sept. 7; one E-boat, by Allied planes, Tyrrhenian Sea, Sept. 6-7; one patrol vessel, one trawler, by British light craft, off France, reported Sept. 8; one E-boat, by RAF, Channel, Sept. 8; one patrol vessel, one minesweeper, by Soviet planes, Gulf of Finland, Sept. 9; two MTBs, by Soviet planes, Sea of Azov, Sept. 14; one patrol vessel, by Soviet Baltic planes, Sept. 14; one trawler, by Soviet planes, Black Sea, Sept. 21; one patrol vessel, by Soviet planes, Barents Sea, Sept. 22; one E-boat, off East Coast, Sept. 25; one patrol vessel, by British light forces, off France, Sept. 27; four cutters, by Soviet planes, Black Sea, Oct. 1; two MTBs, by Soviet planes, Black Sea, Oct. 6; one patrol vessel, by Soviet forces, Barents Sea, reported Oct. 16; one trawler, by RAF, off Crete, Oct. 20; one patrol vessel, by Soviet forces, Barents Sea, Oct. 21; eight E-boats, by British surface forces, reported Oct. 26; one trawler, by Soviet navy, Gulf of Finland, reported Nov. 1; five trawlers, by Soviet MTBs, Narva Bay, Nov. 6; one trawler, by British light forces, Nov. 3; one minelayer, one E-boat, by British light forces, Mediterranean, reported Nov. 10; four patrol vessels, one MTB, by Soviet navy, planes, Black Sea, Nov. 17-21; one minesweeper, Black Sea, Nov. 24; one MTB, by Polish *Sokol*, Aegean, announced Nov. 26; one minelayer, one minesweeper, one motor patrol boat, by Soviet forces, Barents Sea, reported Nov. 30; five patrol vessels, one minesweeper, by Soviet navy, planes, Black Sea, Dec. 4-10; two trawlers, Black Sea, reported Dec. 30.

1944: two MTBs, by Soviet planes, Black Sea, Jan. 1B; one patrol vessel, by Soviet forces, Barents Sea, Jan. 22; one minesweeper, by RAF, off Norway, Feb. 1; two patrol vessels, by Allied surface forces, off Spezia, reported Feb. 3; one E-boat, by British destroyers, off Anzio, reported March 27; one minesweeper, Gulf of Finland, March 2B; two patrol vessels, three minesweepers, two cutters, by Soviet planes, Baltic, reported March 30.

JAPAN-WAR LOSS

Identification of Japanese war losses has proved exceptionally difficult, confusion extending even to categories. In some instances, in which photographs have later become available, cruiser casualties have proved to be only destroyers, destroyers to be minesweepers, etc. Corrections, of course, have been made wherever information is available, but there are doubtless many others. Moreover, qualified American naval observers agree that actual sinkings do not approach the totals claimed, in some categories being less than half as great. (See introductory notes under the different combatant categories in the Japanese data section). Japanese admissions, on the other hand, are preposterously low, totaling to March 31, 1944, only one battleship, five cruisers, 25 destroyers, eleven submarines (possibly including midget submarines), six minesweepers, a seaplane carrier, a patrol vessel and an oiler.

BATTLESHIPS

Two of Kongo class, sunk in Battles of Guadalcanal, Nov. 13-15, 1942. (One admitted by Japanese, with reference to age of ship indicating she might have been of Hyuga class).

CRUISERS

MIKUMA (1934), 8,500 tons. Air torpedoed, June 6, 1942, in Battle of Midway.

MOGAMI (1934), 8,500 tons. Possibly sunk by U. S. naval torpedo planes, June 6, 1942, in Battle of Midway.

One of Natori type sunk by defenders of Wake, December, 1941; one by U. S. Army Air Forces, Sulu Sea, January, 1942; one by U. S. naval task force, Kwajalein, Jan. 31, 1942; one sunk off Amboina by shore batteries or mines, February, 1942; one of Mogami type claimed sunk in Battle of Java Sea, Feb. 27, 1942 (doubtful); one by U. S. submarine, Christmas Island, March, 1942; one of Natori class and one other possibly sunk by U. S. PTs off Cebu, April 10, 21, 1942; three heavy and one light by U. S. Navy in Battle of Coral Sea, May 7-B, 1942; one of Kako class by submarine, Southwest Pacific, May 21, 1942; one possibly torpedoed by USAAF, Aleutians, June 15, 1942; one by American submarine, Sept. 3, 1942; two to four (three of Nati or Atago class) by U. S. cruiser squadron, Battle of Cape Esperance, Oct. 12, 1942; one by U. S. submarine, Oct. 14, 1942; one possibly sunk by USAAF, Rabaul, Oct. 24, 1942; eight or nine by U. S. surface and air forces in Battles of Guadalcanal, Nov. 13-15, 1942; one by Allied bombers, Gona, Nov. 19, 1942; one by USAAF N. E. of New Guinea, Dec. 20, 1942; two by USAAF off New Ireland, April 3, 1943; one light cruiser by U. S. Navy, Battle of Kula Gulf, July 12, 1943; one light cruiser (may have been flotilla leader only) by Allied aircraft, Bougainville, July 17, 1943; one light cruiser by U. S. planes, Vella Gulf, July 20, 1943; one by U. S. surface ships, Vella Gulf, Aug. 7, 1943; one light cruiser (possibly *Yubari*) by U. S. Navy, Vella Lavella I., Oct. 6, 1943; one by U. S. squadron, W. of Bougainville, Nov. 2, 1943 (admitted); one by Allied aircraft, Rabaul, Nov. 7, 1943; one by U. S. carrier force, Rabaul, Nov. 13, 1943; two of Kuma or Natori classes by U. S. carrier force, Kwajalein, Dec. 4, 1943; one of Kuma class by British submarine, Malacca Strait, reported Jan. 21, 1944.

Kako and *Hurutaka* believed to be among above.

DESTROYERS AND TORPEDO BOATS

HAMAKAZE (1940), 2,000 tons. Sunk by Allied bombers, Normandy I., Sept. 12, 1942.

TAKANAMI. Possibly of 2,200-ton Terutuki type. Sunk off New Guinea, 1942.

URANAMI (1928), 1,700 tons. Torpedoed by Dutch submarine, Sarawak, Dec. 24, 1941. (Admitted).

1941: four sunk by defenders of Wake, December (two admitted); one probably sunk by U. S. submarine, Dec. 1B; one by Dutch planes, Sarawak, December (admitted).

1942: one by U. S. planes, Davao, Jan. 5; one by Dutch submarine, Macassar Strait, Jan. 25; one by British destroyers, Malaya, Jan. 26; one by U. S. carriers, Kwajalein, Jan. 31; two to four, Battle of Java Sea, Feb. 27; one by Amboina shore guns, February; one by U. S. submarine, early March; one by U. S. submarine, Bali, reported April 11; one by U. S. submarine, reported May 11; two, Battle of Coral Sea, May 7-8; three, Battle of Midway, June 4-6; two by U. S. submarine, Kiska, July 4; one by U. S. submarine, Agattu, July 4; one by U. S. submarine, Kiska, July 5; three more by U. S. submarines, Kiska, reported July 21; one by U. S. submarine, W. Pacific, reported July 25; four, Battle of Cape Esperance, Oct. 12; one possibly sunk by USAAF, Kiska, Oct. 17, and another possibly sunk by USAAF, Rabaul, Oct. 24; six, Battles of Guadalcanal, Nov. 13-15 (two admitted lost in this and other Solomons battles); one by Allied planes, Gona, Nov. 19; one by Allied planes, Buna, Nov. 23; two or three by Allied planes, Huon Gulf, Nov. 26; six (including two flotilla leaders), Battle of Lunga Point, Nov. 30; one by U. S. submarine, Pacific, reported Dec. 1; one by U. S. Navy planes, Guadalcanal, Dec. 4; one or two by U. S. surface forces, Solomons, Dec. 12.

1943: one by Allied forces near Gasmata, Jan. 12; two by

U. S. submarines, reported Jan. 20, 31; one to three by U. S. naval planes, Jan. 31-Feb. 1; one to three by U. S. PTs, Feb. 1-2; one or two by U. S. naval planes, Feb. 4; one by Allied planes, Rabaul, Feb. 24; ten (including three flotilla leaders) by U. S. planes, Battle of Bismarck Sea, March 2-3; two by U. S. forces shelling New Georgia, March 5-6; one by U. S. submarine, Pacific, reported March 16; one possibly sunk by Allied bombers, Finschhafen, March 31; one by U. S. Navy planes, Shortland, reported March 29; one by U. S. submarine, Pacific, reported April 4; one by Allied bombers, New Ireland, April 4; two by U. S. submarines, Pacific, reported May 4; one by U. S. submarine, North Pacific, reported May 17; one by U. S. submarine, Pacific, reported June 1; one possibly sunk by U. S. planes, Bougainville, June 5; one by U. S. submarine, Pacific, reported June 14; one by U. S. submarine, Pacific, reported June 28; seven, first Battle of Kula Gulf, July 5-6; three to five, second Battle of Kula Gulf, July 12-13; two destroyers and flotilla leader (may have been light cruiser) by Allied bombers, Bougainville, July 17; one by U. S. surface forces, Kolombangara, July 19; two or three by U. S. planes, Vella Gulf, July 20; two by Allied bombers, Cape Gloucester, July 2B-20; two or three by U. S. surface forces, Vella Gulf, Aug. 7; one by U. S. surface forces, Vella Gulf, Aug. 17-1B; one possibly sunk by U. S. 14th AF, China coast, Sept. 15; one by Allied bombers, Bougainville, Oct. 1; two by U. S. surface forces, Vella Gulf, Oct. 6; three by USAAF, Rabaul, Oct. 14; one possibly sunk by USAAF, Cape Orford, Oct. 26, and another possibly sunk by USAAF, Mundua I., Nov. 1; three by USAAF, Rabaul, Nov. 4; four by U. S. surface forces, W. of Bougainville, Nov. 2; one by USAAF, Bismarck Sea, Nov. 7; one torpedo boat by U. S. 14th AF, Amoy, Nov. 9; two destroyers by U. S. carriers, Rabaul, Nov. 13; four by U. S. light forces, between Bougainville and New Britain, Nov. 24; one torpedo boat by U. S. 14th AF, South China Sea, Nov. 29; one torpedo boat by Allied light forces, Arawe, Dec. 10; one destroyer by U. S. carriers, Kavieng, Dec. 28; one by U. S. submarine, Pacific, reported Dec. 28.

1944: one by Allied aircraft, Mussau I., Feb. 18; one by Allied bombers, New Guinea, March 23.

Above believed to include *Arasi* and *Osio*, destroyers, and *Hato*, torpedo boat.

SUBMARINES

I-5 (1931), 1,955 tons. Accidentally lost, 1941.

Two sunk by U. S. Navy, Pearl Harbor, December, 1941 (admitted); one by defenders of Wake, December, 1941; one by USAAF, Dec. 25, 1941; one by British ships, Malaya, Jan. 24, 1942; one by Dutch ship, Far East, Jan. 30, 1942; two by U. S. task force, Kwajalein, Jan. 31, 1942; one by U. S. Navy, Hawaii area, early 1942; two by Allied destroyers, Bali, Feb. 20, 1942; one during attack on Amboina, February, 1942; one possibly sunk by U. S. forces following attack on Yorktown, June 6; one possibly sunk by British merchantman Tongariro, Indian Ocean, June 27, 1942; three by RAAF, June, 1942; one by Allied planes, New Guinea, March 19, 1943.

Above include *I-160* and *Ro-61*.

In addition to foregoing, Japanese have lost at least twelve midget submarines: five at Pearl Harbor, Dec. 7, 1941; four at Sydney, May 31, 1942; and three, damaged by bombs, found on marine railway at Kiska, Aug. 15, 1943.

ARMED MERCHANT CRUISER

KIKOKU MARU, 10,000 tons gross. Sunk by British *Bengal* and Dutch tanker *Ondine*, Indian Ocean, Nov. 11, 1942.

GUNBOATS AND MINELAYERS

One sunk by defenders of Wake, December, 1941; four in Battle of Coral Sea, May 7-8, 1942; one by U. S. planes, Hankow, June, 1942; one by Makin I. raiders, Aug. 17, 1942; one by U. S. submarine, W. Pacific, reported Sept. 17, 1942; two by U. S. surface forces, Tarawa, Oct. 24, 1942; one by gunfire of U. S. submarine, Central Pacific, reported March 14, 1943; one by U. S. submarine, reported May 7, 1943; one by U. S. submarine, Pacific, reported June 28, 1943; one by U. S. light forces, Choiseul, Oct. 8, 1943; one possibly sunk by USAAF, Rabaul, Oct. 20, 1943; one by U. S. 14th AF, Hainan I., Nov. 22, 1943; one possibly sunk by 14th AF, South China coast, Jan. 15, 1944; one by U. S. light surface forces, Bougainville Strait, Jan. 23, 1944; one captured by U. S. troops, Arawe, Feb. 22, 1944; one of coastal type sunk by U. S. submarine, Pacific, reported March 24, 1944.

SUB CHASERS AND OTHER PATROL VESSELS

One sub chaser by U. S. submarine, reported March 24, 1942; one sub chaser by U. S. submarine, reported April 11, 1942; one corvette by U. S. planes, Vella Lavella, Feb. 27, 1943; one trawler by U. S. submarine, Pacific, reported June 1, 1943; one sub chaser by Allied aircraft, Rabaul, July 17, 1943; three patrol boats by Allied aircraft, Choiseul, Aug. 29, 1943; one trawler by U. S. naval aircraft, Marcus I., reported Sept. 9, 1943; one corvette by Allied aircraft, Buka, Nov. 9, 1943; one possibly sunk by Allied aircraft, Tanimbar I., Nov. 19, 1943; one patrol vessel by U. S. Navy Liberators, Jaluit, Dec. 9, 1943; one patrol vessel by Allied aircraft, Lorengau harbor, Jan. 24, 1944; two corvettes by U. S. aircraft, Mussau I., Feb. 19, 1944; three corvettes by aircraft, Rabaul, Feb. 22, 1944; one escort vessel by Allied planes, Rabaul, Feb. 24, 1944.

MINESWEEPERS

One by U. S. submarine, Dec. 25, 1941 (admitted); two by Tarakan coastal batteries, January, 1942 (admitted); two by USAAF, Kiska, Sept. 14, 1942; one by U. S. 14th AF, East China coast, Jan. 27, 1944.

Loss of three other minesweepers December, 1941 admitted.

AUXILIARIES

One by U. S. submarine, East Indies, reported Feb. 26, 1942; one oiler by U. S. submarine, early March, 1942; one by U. S. submarine, Celebes Sea, reported April 10, 1942; two by U. S. submarines, reported May 12 and 28, 1942; one "special service ship" admitted lost in raid on Rendova Island, July 21, 1943.

In addition to an enormous part of her ocean-going merchant marine, by the spring of 1944, Japan had also lost more than 1,000 transport and cargo barges, severely restricting her ability to move troops and supplies within combat areas.

AIRCRAFT CARRIERS

AKAGI (1925), KAGA (1921), 26,900 tons. Sunk, June 4-S, 1942, Battle of Midway.

HIRYU, 10,050 tons. Sunk, June 4-S, 1942, Battle of Midway.

RYUKAKU (1940), 20,000 tons. Sunk, Battle of Coral Sea, May 7, 1942.

SORYU, 10,050 tons. Sunk, June 4-S, Battle of Midway.

The loss of two carriers in the Battle of Midway was admitted.

SEAPLANE CARRIERS AND PLANE TRANSPORTS

NITTA MARU (1941), 16,500 tons gross. Destroyed by U. S. task force, Kwajalein, Jan. 31, 1942.

One possibly sunk by U. S. submarine, Dec. 25, 1941; one possibly sunk by U. S. submarine, Macassar Strait, Jan. 25, 1942; one possibly sunk by Allied planes, Boni Gulf, February, 1942; one of Miduho type by U. S. submarine, May, 1942; one by U. S. submarine, Far East, reported Oct. 2, 1942; two by U. S. submarines, Pacific, reported Nov. 14, 26, 1943.

GREECE - WAR LOSS

DESTROYERS

LEON (1911), 1,050 tons. Lost while resisting Nazis, April, 1941. PSARA (1932), 1,389 tons. Lost during German invasion, April, 1941.

VASILEVS GEORGIOS I (1938), 1,350 tons. Sunk at Piraeus, April, 1940. May have been salvaged by Germans.

VASILISSA OLGA (1938), 1,350 tons. Lost, Oct. 8, 1943.

YDRA (1931), 1,389 tons. Lost, German invasion, April, 1940.

TORPEDO BOATS

Following were all lost resisting German invasion, April, 1941:

AIGLI, ALIKIONE, ARETHOUSA, DORIS (1913), 123 tons.

KIDONIA, KIOS, KYZIKOS (1914), 241 tons.

PERGAMOS (1914), PROUSA (1915), 241 tons.

THETIS (1913), 123 tons.

THYELLA (1907), 305 tons.

SUBMARINES

GLAFKOS (1928), 718 tons. Missing.

KATSONIS (1926), 595 tons. Reported missing, Oct. 5, 1943.

PROTEUS (1927), 718 tons. Missing, early 1941.

TRITON (1928), 718 tons. Lost, Dec. 11, 1942.

MINELAYERS

Following all lost during German invasion, April, 1941, except as noted:

ALLAKMON (ex-English Castle), AXIOS (ex-Y-3), 325 tons gross. HELLE (1912), 2,083 tons. Obsolete minelaying cruiser. Torpedoed by Italian submarine off Tinos, Aug. 15, 1940, before Italian invasion.

KORGIALENIOS (1916), 380 tons.

NESTOS (ex-Mersey), 325 tons gross.

ORION (1919), 707 tons.

PARALOS (1925), 395 tons.

PLEIAS (1926), 520 tons.

STRYMON (ex-Y-4), 325 tons gross.

TENEDOS (1906), 460 tons.

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NETHERLANDS - WAR LOSS

CRUISERS

DE RUYTER (1935), 6,450 tons. Torpedoed in Battle of Java Sea, Feb. 27, 1942.

JAVA (1921), 6,670 tons. Torpedoed in Battle of Java Sea, Feb. 27, 1942.

COAST DEFENSE SHIP

SOERABAJA (1909), 5,644 tons. Damaged by air attack at Surabaya and blown up to avoid enemy capture, March, 1942.

DESTROYERS

BANCKERT (1929), 1,316 tons. Lost in Java Sea, February, 1942.

EVERTSEN (1926), 1,310 tons. Crippled and beached in Sunda Strait, March 7, 1942.

ISAAC SWEERS (1940), 1,628 tons. Lost off Algiers, November, 1942.

KORTENAER (1927), 1,310 tons. Lost in Battle of Java Sea, Feb. 27, 1942.

PIET HEIN (1927), 1,310 tons. Lost off Bali, February, 1942.

VAN GALEN (1928), 1,316 tons. Sunk by Luftwaffe off Rotterdam, May, 1940.

VAN GHENT (1926), 1,310 tons. Lost off Bali, February, 1942.

VAN NES (1930), 1,316 tons. Lost off Banka, February, 1942.

WITTE DE WITH (1928), 1,316 tons. Blown up in Surabaya dry-dock to avoid Japanese capture, March, 1942.

TORPEDO BOATS

G-16 (1914), 180 tons; Z-3 (1916), 277 tons; Z-6 (1915), 263 tons. All lost during German invasion of Holland, May, 1940.

ESCORT CRAFT

BRINIO (1912), 540 ton gunboat. Missing Zuider Zee, May, 1940.

FREIJR (1877), 240 tons. Gunboat. Lost during invasion of Holland, May, 1940.

FRISO (1912), 540 tons. Gunboat. Lost in Zuider Zee, May, 1940.

JOHAN MAURITS VAN NASSAU (1932), 1,520 tons. Sloop. Lost in Zuider Zee, May, 1940.

SUBMARINES

K-7 (1920), 507 tons. K-13 (1924), 611 tons.

K-16 (1933), K-17, 18 (both 1932), all 771 tons.

O-11 (1925), 483 tons. Destroyed to avoid capture, May, 1940.

O-12 (1930), 546 tons. Destroyed to avoid capture, May, 1940.

O-15 (1931), 546 tons. O-16 (1936), 896 tons.

O-20 (1939), 967 tons. Struck mine off Malaya, Dec. 13, 1941.

O-22 (1940), 888 tons.

O-25 (1940), 888 tons. Scuttled to avoid capture, May, 1940.

O-26, 27. 888 tons. Blown up while under construction to avoid capture, May, 1940.

OTHER VESSELS

No. 1 (1939), 555 tons. Minelayer. Lost in resisting German invasion, May, 1940.

A (1929), 179 tons. Minesweeper. Lost resisting invasion, May, 1940.

ABRAHAM VAN DER HULST (1937), 525 tons. Minesweeper. Lost in invasion of Holland, May, 1940.

B, C (1929-30), 179 tons. Minesweepers. Lost resisting invasion, May, 1940.

CAROLINE. Trawler. Lost, 1941.

COLOMBIA. Submarine tender. Torpedoed and sunk off East London, February, 1943.

CORNELIS DREBBEL (1915), 668 tons. Submarine tender. Lost in German invasion, May, 1940.

D (1930), 179 tons. Minesweeper. Lost in invasion, May, 1940.

EILERTS DE HAAN (1919), 312 tons. Surveying vessel. Lost in East Indies, 1942.

ELAND DUBOIS (1936), 525 tons. Minesweeper. Lost in Indies, 1942.

GOUDEN LEEUW (1931), 1,291 tons. Minelayer. Lost in Indies, 1942.

HYDRA (1911), 593 tons. Minelayer. Lost in Zuider Zee, May, 1940.

JAN VAN AMSTEL (1936), 525 tons. Minesweeper. Lost in Indies, 1942.

KRAKATAU (1924), 982 tons. Minelayer. Lost in East Indies, 1942.

M-1 - 4 (1916), all 230 tons. Minesweepers. Lost in resisting Nazis, May, 1940.

NAUTILUS (1929), 800 tons. Minelayer. Lost by collision, 1941.

PIETER DE BITTER (1936), 525 tons. Minesweeper. Lost in East Indies, 1942.

PIETER FLORISZ (1937), 525 tons. Minesweeper. Sunk by Nazis, May, 1940.

PRINS VAN ORANJE (1931), 1,291 tons. Minelayer. Lost off Borneo, 1942.

PRO PATRIA (1922), 537 tons. Minelayer. Lost in Dutch Indies, 1942.

SERDANG (1897), 680 tons. Minelayer. Lost in East Indies, 1942.

TM-3 - 14 (1937-40), 15 tons. MTBs, all lost in Far East, 1942.

TYDEMAN (1916), 1,160 tons. Surveying vessel. Lost in East Indies, 1942.

VAN MEERLANT (1920), 680 tons. Minelayer. Lost, 1941.

WEGA (1922), 1,015 tons. Sunk by Japanese planes, January, 1942.

WILLEBRORD SNELLIUS (1928), 930 tons. Surveying vessel. Lost in eastern waters, 1942.

WILLEM VAN EWIJK (1937), 525 tons. Minesweeper. Mined off Holland, Sept. 8, 1939.

In addition to the above, virtually all Netherlands Indies Government service and police vessels were lost in 1942. Among these units were: 2 2,200-ton minelayers, 4 328-ton patrol vessels, several launches (some possibly not completed); the 200-ton patrol vessels *Aroe*, *Bantam*, *Boeroe*, *Bogor*, *Ceram*, *Cheribon*, *Digoel*, *Fazant* (624 tons), *Reiger* (624 tons), *Merel* (592 tons), the governor-general's yacht, *Rigel* (1,631 tons), *Fomalhout* (1,000 tons), *Sirius* (1,015 tons), *Orion* (1,062 tons), *Aldebaran* (892 tons), *Bellatrix* (773 tons), *Deneb*, *Canopus*, *Albatros* (892 tons), *Gemma* (845 tons), *Eridanus* (1,000 tons), all customs and police control craft; *Arend* and *Valk*, 1,011-ton fishery protection vessels; *Hoofdinspecteur Zeeman*, *Pallux* and *Poolster*, lighthouse tenders.

NORWAY - WAR LOSS

In addition to the vessels listed below, the British destroyer *Bath*, escort destroyer *Eskdale* and corvette *Montbretia*, manned by Norway, have been lost. They are listed under Britain.

COAST DEFENSE SHIPS

EIDSVOLD, NORGE (1900), 4,166 tons. Both torpedoed by Nazi destroyers at Narvik, April 9, 1940.

TORPEDO BOATS AND PATROL CRAFT

AEGER (1936), 597 tons. Bombed, April 9, 1940.
BODÖ (ex-Kos 8). Lost, Jan. 30, 1942.
DJAERV (1897), DRISTIG (1898), 67 tons. Lost, May 2, 1940.
GARM (1913), 540 tons. Lost, April 26, 1940.
GRIB, JO, RAVN (1904-06), 70 tons. Lost, April 18, 1940.
SAEL (1900), 90 tons. Lost, April 19, 1940.
SILD (1900), 70 tons. Sunk by Nazi MTB, May, 1940.
SKREI (1900), 90 tons. Lost, May 18, 1940.
STEGG (1917), 220 tons. Sunk by *Bremse*, April 20, 1940.
STORM (1899), 79 tons. Lost, April 12, 1940.
TEIST (1908), 92 tons. Lost, April 14, 1940.
TRYGG (1917), 220 tons. Lost, April, 1940.

SUBMARINES

A-2 - 4 (1914), 250 tons. All lost, April, 1940.
B-3 (1926), 420 tons. Lost, June 10, 1940.
UREDD. Reported missing, March 24, 1943.

OTHER VESSELS

FRIDTJOF NANSEN (1931), 1,300 tons. Fishery protection vessel.
FROYA (1916), 595 tons. Minelayer. Lost, April, 1940.
HARSTAD (ex-Kos 17). Minesweeper. Lost, March 13, 1943.
MICHAEL SARS (1900), 300 tons. Fishery protection vessel, lost April, 1940.
SENJA (1937), 243 tons. Fishery protection vessel, lost April, 1940.
TYR (1888), 281 tons. Minelayer, lost April, 1940.

POLAND - WAR LOSS

This list does not include many vessels scuttled or destroyed in September, 1939, to avoid capture.

DESTROYERS

GROM (2,144 tons), 1936. Bombed off Norway, May 5, 1940.
KUJAWIAK (ex-Oakley), 904 tons. Hunt class destroyer transferred to Poland, lost in Mediterranean, July 3, 1942.
ORKAN (ex-Myrmidon, 1940), 1,920 tons. British Laforey type vessel transferred to Poland, lost Oct. 13, 1943.
WICHER (1928), 1,540 tons. Bombed at Gdynia, Sept. 3, 1939. (Germans claim to have salvaged her.)

TORPEDO BOAT

MAZUR (1914), 349 tons. Bombed by Gdynia, Sept. 3, 1939.

SUBMARINES

JASTRZĄB (ex-S-25, 1920), 800 tons. Lend-leased to Great Britain by U. S., and re-transferred to Poland. Lost by collision in May, 1942.
ORZEL (1938), 1,110 tons. Missing, June, 1940.

OTHER VESSELS

CZAJKA (1935), CZAPLA (1938), 183 tons. Minesweepers. Lost, September, 1939.
GENERAL HALLER (1918), 342 tons. Gunboat. Lost, September, 1939.
GRYF (1936), 2,227 tons. Minelayer. Sunk by Nazi planes and destroyers, Gdynia, Sept. 3, 1939.
JASKOLKA (1934), 183 tons. Minesweeper. Lost, September, 1939.
KOMENDANT PILSUDSKI (1919), 342 tons. Gunboat. Lost, September, 1939.
MEWA (1935), RYBITWA (1935), ZURAW (1935), 183 tons. Minesweepers, lost September, 1939.

YUGOSLAVIA - WAR LOSS

DESTROYER

ZAGREB (1938), 1,210 tons. Blown up to avoid enemy capture, April, 1941.

MOTOR TORPEDO BOAT

VELEBIT (1936), 60 tons. Irreparably damaged by bombs and scrapped, 1942.

FINLAND - WAR LOSS

COAST DEFENSE SHIP

ILMARINEN (1931), 3,900 tons. Mined in Gulf of Finland, Sept. 20, 1941.

GUNBOAT

KARJALA (1918), 342 tons. Lost in 1942.

ARMED YACHT

AURA. Torpedoed in Gulf of Finland by Soviet submarine, Jan 14, 1940.

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ROUMANIA - WAR LOSS

DESTROYERS

MARASESTI (1918), 1,410 tons. Torpedoed by Soviet submarine in Black Sea, Sept. 26, 1942.

REGINA MARIA (1929), 1,821 tons. Lost in 1943. Sister, *Regele Ferdinand*, probably also sunk.

GUNBOAT

LOCOTENANT LEPRI REMUS (1917), 394 tons. Lost in 1942.

MOTOR TORPEDO BOATS

VIFORUL, VIJELIA (1939), 32 tons. Bombed by Soviet planes, Sept. 18, 1942. Possibly others lost in later actions.

THAILAND - WAR LOSS

CHOLBURI, SONGKLA (1937), 318 tons. Torpedo boats, sunk by French Indo-China squadron in Gulf of Siam, January, 1941, in brief Thai-Indo-China "war."

ADDENDA

UNITED STATES

Heavy cruiser *Albany*, CA-72, renamed PITTSBURGH and launched, Bethlehem Quincy, 2/22/44.

Light cruisers PASADENA, CL-65, and SPRINGFIELD, CL-66, launched, Bethlehem Quincy, 12/28/43 and 3/9/44; OKLAHOMA CITY, CL-91, Cramp, 2/20/44; DAYTON, New York Shipbuilding, 3/19/44.

Light cruiser ATLANTA, named for vessel lost in S. W. Pacific, 1942, launched, New York Shipbuilding, 2/6/44. New *Atlanta* apparently of Cleveland type.

Light cruiser GALVESTON, CL-93, laid down, Cramp, 2/20/44.

Contract for light cruiser DULUTH, CL-87, transferred from Federal Shipbuilding to Newport News S8 & Drydock, and launched 1/13/44. Contracts for *Fargo*, CL-85, and *Cheyenne*, CL-86, possibly also transferred.

Late in 1943, several yards laid down a new type of destroyer, a slightly enlarged edition of the Fletcher class. The new vessels displace 2,200 tons instead of the Fletchers' 2,100 and were designed to counter the Japanese Terutukis. Launchings of the new type have been reported as follows:

Bath Iron Works: DE HAVEN (named for vessel lost in Solomons, 1943), 1/9/44; MANSFIELD, 1/29/44.

Bethlehem, San Pedro: LOWRY, 2/6/44.

Bethlehem, Staten Island: BRUSH, 12/28/43; TAUSSIG, 1/25/44; MOORE, 2/23/44; HUBBARD, 3/24/44, and others.

Federal Shipbuilding: INGRAHAM (named for vessel lost in Atlantic, 1942), 1/17/44; MOALE, 1/17/44; COOPER, 2/9/44; ENGLISH, 2/27/44; SPERRY, 3/13/44; HAYNSWORTH, 4/15/44, and others.

Destroyers COLLETT and MADDOX (named for vessel lost in S. W. Pacific, 1942) launched at Bath Iron Works, 3/5/44 and 3/19/44. Type uncertain, but probably 2,200-tonners.

WATTS, DD-567, 2,100 tons, launched, Seattle-Tacoma S8 Co., 12/31/43.

Destroyer Escorts LUKE and BARR, launched 12/27/43; WINGFIELD and THORNHILL, 12/30/43; LOUGH, NICKEL and O'TOOLE, 1/22/44; GILLIGAN and McCOY REYNOLDS, 2/22/44; POWERS, 2/29/44; J. A. RAVEN and R. A. BELET, 3/3/44; SEIVERLING and U. M. MOORE, 3/7/44; FORMOE (listed on Page 205) and GRADY, 4/2/44; J. J. COFER, 1944; CASSIN YOUNG (launch date unreported).

KENDALL C. CAPBELL and ANGUS R. GOSS, launched 3/19/44. Type uncertain, but appear to be destroyer escorts.

Some U. S. DEs now carry torpedo armament.

A vessel is to be named for the late Lewis Compton, former assistant secretary of navy. The *Compton* will be a destroyer or destroyer escort.

Destroyer escort MASON, which joined the U. S. fleet in March, 1944, has a predominantly Negro crew, first such crew in Navy annals.

Frigate GREENSBORO launched, American S.B. Co., 2/9/44.

Sub chasers PC-1546 and 1547 launched, Consolidated Shipbuilding, 1/44 and 2/8/44.

Submarines BAYA, launched 1/2/44; BECUNA, 1/30/44; BESUGO, 2/27/44; BLACKFIN, 3/12/44 (all built by Electric Boat Co.); RAZORBACK, REDFISH, RONQUIL, and SCABBARD-FISH, 1/25/44 (first quadruple submarine launch in U. S.); SEA CAT, 2/21/44; SEA DOG and SEA FOX, 3/28/44 (all Portsmouth Navy Yard).

American Bridge Co. Ohio River shipyard, Pittsburgh, completed contract for 40 LSTs (Landing ships, tank) 2/8/44 ten days ahead of schedule.

A new type of landing craft, the LSM (Landing ship, mechanized), was disclosed with the launch of LSM 202 at the Dravo yard, Wilmington, Del., 3/15/44. No particulars are available.

PT-309, the highest number yet mentioned for U. S. MTBs, appeared in newspaper reports of 4/1/44.

Minesweepers INFLICT, DESTINY and DESIGN launched 1/16/44, 2/44 and 2/44.

Navy cargo vessel ALSHAIN launched, Federal Shipbuilding, 1/26/44. Of modified C-2 type.

Combat cargo ship CHARS launched, Federal Shipbuilding, 3/15/44.

Navy hospital ship REFUGE, ex-passenger liner, commissioned 1943. World's largest hospital ship.

De Witt Clinton, 3,699 tons gross, Hudson River excursion steamer, converted into Navy transport, 1943-44. New name not released.

Insert (page 226) ex-flush deck destroyer DAHLGREN (ex-DD-187, 1918), 1,190 tons, now disarmed and equipped with experimental steam turbines operating at extreme pressure and temperature (1300 pounds per sq. in., 925 degrees F.).

Essex class aircraft carriers HANCOCK, CV-14, 27,500 tons, launched, Bethlehem Quincy, 1/24/44; SHANGRI LA, 27,500 tons, Norfolk Navy Yard, 2/24/44; and BENNINGTON, 27,100 tons, New York Navy Yard, 2/26/44.

MAKIN ISLAND, escort carrier of Alazan Bay type, launched, Oregon S.B. Corp., 4/5/44.

CASABLANCA identified as escort carrier of Alazan Bay type.

Escort carrier GLACIER (Page 230) transferred to Great Britain and renamed *Atheling*.

Seattle-Tacoma Shipbuilding completed contracts for 49 escort carriers of Glacier and earlier types for U. S., and, under lend-lease, British navies, February, 1944. Company then began construction of 15 of the CVE-105 class (referred to on Page 229 as modified Glacier type).

Statement by Navy Undersecretary James Forrestal, early in 1944, disclosed that over 65 carriers of fleet and escort types both were in service with the U. S. fleet, end of 1943. On March 15, Secretary Knox said that the number of escort carriers alone had grown to more than 50.

Grumman TOMCAT (F7F) and Douglas DTD announced early 1944 as new naval combat planes. Former is single-seat fighter, latter dive bomber. No particulars are available. A new Ryan naval plane has also been reported.

Army hospital ship ACADIA, ex-passenger liner, commissioned 1943.

GREAT BRITAIN

Between the outbreak of the war and February, 1944, British yards launched an average of fifteen naval vessels a month, from battleships to corvettes and other small combat craft.

Escort destroyer HURSLEY of Hunt type transferred to Greece and renamed *Crete*, 1943.

Sloop MAGPIE disclosed in communigue of 3/19/44.

Submarine STUBBORN, presumably of Sealion class, disclosed 3/12/44.

Midget submarines of so-called X type, three of which made successful attack on *Tirpitz*, had four-man crews.

Old monitor ROBERTS recommissioned (1943?) for service along Mediterranean coasts.

Insert (Page 258) HEBE (1936), 815 tons, in Halcyon class minesweepers.

AIMWELL identified as U. S. built auxiliary, possibly a minesweeper.

IMPERIALIST identified as H. M. trawler.

U. S. Navy announced 3/21/44 that 38 escort carriers of American construction were transferred to Royal Navy under lend-lease. Names of those not listed on page 264:

ARBITER (ex-*St. Simon*); ARCHER; ATHELING (ex-*Glacier*), launched 9/7/42; AVENGER (may be vessel lost in 1942); BEGUM (ex-*Bolinas*), 11/11/42; CHASER; DASHER; EMPEROR (ex-*Pybus*), 10/7/42; EMPRESS (ex-*Carnegie*), 12/31/42; KHEDIVE (ex-*Cordova*), 1/30/43; NABOB (ex-*Edisto*), 3/9/43; PATROLLER (ex-*Keeweenaw*), 5/6/43; PREMIER (ex-*Estero*), 3/22/43; PUNCHER (ex-*Willapa*); QUEEN (ex-*St. Andrews*), 8/2/43; RAJAH (ex-*Prince*, ex-*McClure*), 5/18/43; RANEE (ex-*Niantic*), 6/2/43; REAPER (ex-*Winjah*), the final ship of the Seattle-Tacoma-built Glacier class, delivered, 3/44; RULER (ex-*St. George*), launched 8/21/43; SHAH (ex-*Jamaica*), 4/21/43; SLINGER (ex-*Chatham*), 9/19/42; SMITHER (ex-*Vermilion*); SPEAKER (ex-*Delgada*), 2/23/43; STRIKER; THANE (ex-*Sunset*), 7/15/43; TROUNCER (ex-*Perdido*), 6/16/43; TRUMPETER (ex-*Lucifer*, ex-*Bastian*), 12/15/42.

To protect East Coast convoys from enemy aircraft, the Royal Navy operates a number of novel "island forts" which are commissioned as H. M. ships and manned by naval and Royal Marine personnel. The forts are erected on pillars resting on submerged sandbars, after which the "ships" are named.

CANADA

ATHABASKAN (not Athabaskan as given on page 264), IROQUOIS, HAIDA and HURON were built in British yards. Sixth Canadian Tribal class destroyer will be named NOOTKA. *Nootka*, trawler, (page 266), should be NANOOSE. *Nanoose* and sister *Comox* type trawlers resemble British Bassets.

Additional Irigates (dates refer to commissioning): BEACON HILL, COATICOOK, EASTVIEW, GROU, JOLIETTE, JON-QUIERE, KOKANEE, LA HULLOISE, LANARK, LA SALLE, LONGUEUIL, MAGOG, NEW GLASGOW (12/23/43), NEW WATERFORD (1/21/44), ORKNEY, OUTREMONT, PRINCE RUPERT (B/30/43), RUNNYMEDE, ST. JOHN (12/12/43), ST. PIERRE, STE. THERESE, SPRING HILL, STETTLER, STORMONT (11/27/43), THETFORD MINES, TORONTO, VALLEYFIELD. *Wasquesieu*, listed on page 265 as a corvette, is a frigate. *Bazely* should be deleted from list.

Additional corvettes (dates refer to commissioning): AS-BESTOS, ATHOLL (10/14/43), BELLEVILLE, COBOURG, FRONTENAC (10/26/43), GUELPH, HAWKESBERRY, LINDSAY (11/15/43), NORSYD (12/22/43), NORTH BAY, OWEN SOUND, PARRY SOUND, PETERBORO, RIVIERE-DU-LOUP, ST. LAMBERT, TRENTONIAN, WHITBY. *Fort York*, page 265, should be WEST YORK.

Armed merchant cruiser *Prince Robert* has been converted into an AA cruiser, and merchant cruisers *Prince David* and *Prince Henry*, assault landing craft motherships.

Clinton class minesweepers should read Brockville class and include following units (dates refer to commissioning): BROCKVILLE (9/19/42), DIGBY (7/26/42), ESQUIMALT (10/26/42), GRANBY (5/2/42), LACHINE (6/20/41), MELVILLE (12/4/41), NORANDA (5/15/42), TRANSCONA (11/25/42), TROIS RIVIERES (B/12/42), TRURO (B/27/42). *Winnipeg* is of Algerine type (see below); *Drummondville* and *Westmount* are Cowichans; delete *Clinton* and *Gateshead*. Brockvilles are identical with Cowichans except for Diesel instead of steam propulsion.

Additional Cowichan class minesweepers (dates refer to commissioning): BLAIRMORE (11/17/42), FORT WILLIAM (B/25/42), GANANOQUE (11/B/41), KENTVILLE (10/10/42), LOCKEPORT (5/27/42), MULGRAVE (11/4/42), SARNIA (B/13/42), STRATFORD (B/29/42). *Brockville*, *Esquimalt* and *Transcona* are of another type; delete *Esperanza*, *Qualicum*, *Tadoussac*, *St. Ann* and *Wedgeport*.

Canada is building still a third type of minesweeper, the Algerine, identical with the British Alarms. Names so far released (dates refer to commissioning): BORDER CITIES, FORT FRANCIS, NEW LISKEARD, PORTAGE, ST. BONIFACE, SAULT STE. MARIE (6/24/43), WALLACEBURG, WINNIPEG (7/29/43).

Armed yacht *Lynx* has been sold out of service.

U. S. S. R.

Black Sea trawler *Arseni Rasnkin* named in Soviet communiqué.

FRANCE

Battleship *Richelieu* retains her original secondary armament. Special 152 mm shells to fit it are being manufactured by the Rheam Manufacturing Co., New York.

All U. S. built French destroyer escorts built by Dravo Corporation under French names.

Sub chaser GAVELOT, type unspecified, launched Sturgeon Bay, 3/4/44 for French navy under lend-lease.

ITALY

A statement by the newspaper *Corriere* of Salerno March 21, 1944, said that 296 vessels from MTBs to cruisers are active on behalf of the Allies under the Badoglio flag. These vessels carried out 231 missions, including the escort of 176 Allied convoys with 2,544 ships, in the six and a half months between the surrender and the middle of March, 1944.

The British Ministry of Economic Warfare reported March 21, 1944, that large-type Italian submarines were acquired by Germany in 1943 for conversion into Orient-to-Europe blockade runners, by removal of torpedo tubes. Cargo capacity is said to average about 200 tons each.

Midget submarines were found by Allied forces occupying the naval base of Taranto, 1943.

GERMANY

Armed merchant cruisers: in addition to the armed merchant cruisers sunk by Allied forces and listed in the war loss section, four German merchant raiders have been identified: KOMET, which reached the Pacific, according to German claims, by way of the Soviet Arctic coast and sank 100,000 tons of shipping in the Pacific and Indian Oceans before her successful return to Germany; ORION, which laid minefields in the Pacific; THOR, which claimed 100,000 tons of Allied shipping in the South Atlantic during a cruise on which it fought three engagements with British auxiliary cruisers, one of which, *Voltaire*, she sank; and WIDDER, which cruised in the Caribbean but apparently with little success owing to engine trouble that forced her to return to Germany. German merchant cruisers are generally small ships which depend on camouflage for close approach and a surprise blow. The Germans have found that large, fast merchantmen make poor raiders owing to their great appetites for fuel.

BRAZIL

Two torpedo boats of 1,376 tons displacement and one 172-ton sub chaser reported launched 11/29/43. Torpedo boat report possibly refers to Acre class of British H-type destroyers.

GREECE

Additional British-built Hunt type escort destroyer, CRETE (ex-Hursley), transferred to Greece, 1943. Transfer of *Nearchos* and *Themistocles* not yet effected, early 1944.

NETHERLANDS

Frigate JOHAN MAURITS VAN NASSAU, built in England and named for sloop lost in 1940, commissioned 1943.

Three British-built corvettes commissioned in 1942-43, in addition to FRISIO. Names unreported.

Submarine ZWAARDVISCH built in Britain 1943. Particulars wanting.

NORWAY

STORD. British-built Norwegian or Norwegian-manned destroyer of Saumarez type. Took part in sinking of *Scharnhorst*.

YUGOSLAVIA

American tanker *Ohio* (1940), 9,624 tons gross, badly damaged by enemy air attack on convoy run to Malta in 1942, taken over by Yugoslav government-in-exile and rebuilt as fleet headquarters ship.

Old cruiser *Dalmacija*, employed before war as training ship, taken over by Germans and refitted as coast defense cruiser. Damaged by U. S. PT attack, 12/25/43.

WAR LOSSES

UNITED STATES

Destroyer escort LEOPOLD (1943), 1,300 tons, manned by Coast Guard, sunk in Atlantic, March 10, 1944, by underwater explosion.

Submarine CORVINA, SS-226 (1943), 1,525 tons, reported missing, March 14, 1944.

Submarines SCULPIN, SS-191 (1938), 1,475 tons, and CAPELIN (1/20/43, Portsmouth Navy Yard), 1,525 tons, reported missing, March 18, 1944.

Submarine SCORPION, SS-278 (1942), 1,525 tons, reported missing, March 22, 1944.

Eight landing craft of unspecified types; minesweeper PORTENT, AM-106 (1942), 700 tons; motor minesweeper YMS-30 (1942), 260 tons; and harbor tug YT-19B lost in various actions in Mediterranean in period Jan. 21 to March 31, 1944.

Submarine rescue vessel MACAW, ASR-11 (1942), 2,000 tons, wrecked on coral reef in Pacific, Dec. 13, 1943.

Transport JOHN PENN (ex-*Excambion*, 1931), 9,359 tons gross, lost en route from Guadalcanal, Sept. 23, 1943.

GREAT BRITAIN

Cruiser PENELOPE (1935), 5,270 tons, and flotilla leader INGLEFIELD (1936), 1,530 tons, lost in Anzio landing operation (announced March 6, 1944).

Destroyer LAFOREY (1939), 1,920 tons. Reported lost April 17, 1944.

Destroyer MAHRATTA (ex-Marksman, 1940), 1,920 tons, reported lost March 17, 1944.

Fleet minesweeper HYTHE (ex-Bonff), 750 tons, reported lost Dec. 2, 1943.

Trawlers CLAUGHTON WYKE and SOTRA reported lost March 6, 1943.

AUSTRALIA

Hospital ship CENTAUR, torpedoed E. of Brisbane, reported May 14, 1943.

ITALY

Regolo class cruiser ULPIO TRAIANO (1941?), 3,362 tons. Apparently completed 1942. Sunk by torpedo attached to hull by British divers, Palermo harbor, January, 1943.

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Edited by Phillip Andrews and Leonard Engel